



*MC3504- Molecular Microbiology*

*Course Handbook 2023-2024*

*Undergraduate Medical Sciences*

*School of Medicine, Medical Sciences & Nutrition*

Contents

* [Course Summary 3](#_Toc156487618)
* [Course Aims & Learning Outcomes 3](#_Toc156487619)
* [Course Accessibility Statement 4](#_Toc156487620)
* [Course Teaching Staff 5](#_Toc156487621)
* [Assessments & Examinations 5](#_Toc156487622)
* [Class Representatives 6](#_Toc156487623)
* [Problems with Coursework 6](#_Toc156487624)
* [Course Reading List 7](#_Toc156487625)
* [Lecture Synopsis 8](#_Toc156487626)
* [Practical Work 10](#_Toc156487627)
* [Essay 10](#_Toc156487628)
* [University Policies 10](#_Toc156487629)
* [Academic Skills – Student Learning Service 11](#_Toc156487630)
* [Medical Sciences Common Grading Scale 12](#_Toc156487631)
* [MC3504 Course Timetable: 2023-2024 13](#_Toc156487632)
* [Campus Maps - Foresterhill 17](#_Toc156487633)
* [Polwarth Floor Plans 18](#_Toc156487634)

# Course Summary

This course teaches molecular approaches in current experimental microbiology. Areas covered include molecular mechanisms of adaptation to environmental change, use of microbes to study fundamental biological processes, pathogenesis and interaction with other microbes, as well as microbial evolutionary relationships. Throughout the course, emphasis will be placed on direct relevance of these topics to current problems in medicine, agriculture, food and related industries. Together this information provides an in-depth description of how the growth and interaction between microorganisms and the environment is regulated at the molecular level.

# Course Aims & Learning Outcomes

Aims

The aims of the course are to enable students:

1. To establish knowledge of a broad range of modern aspects of microbiology, reflecting areas of high-profile research activity;
2. To establish an understanding of modern molecular mechanisms related to medical microbiology and environmental microbiology;
3. To gain experience of practical work and data analysis that reflects research interests in microbiology.

Learning Outcomes

The subject-specific learning outcomes are such that, at the end of the course, students should be able:

* To understand how microorganisms, interact with their environment to both grow and survive external stress
* To understand how microorganisms, interact with each other when growing in mixed populations and to describe positive and negative signalling between microorganisms in the environment
* To understand how microorganisms grow and develop
* To understand the general principals of antimicrobial drug action
* To understand the use of microorganisms in modern biotechnological processes
* To apply practical skills and team-working skills

* To develop scientific writing skills to explain a modern microbiological concept and to create a scientific report, which includes analysis and evaluation of practical results.

Students will also develop practical skills in data interpretation, communication as well as interpersonal and team-working skills. These represent transferable skills that will benefit students across a range of disciplines.

The aims of the course will be achieved through a combination of lectures, workshops and practical classes.

# Course Accessibility Statement

The University of Aberdeen is committed to equity of opportunity for all students, including those

with disabilities and specific learning difficulties. We are working to improve the digital accessibility

of our learning resources and platforms. This course has been checked for digital accessibility issues

automatically using Blackboard Ally software and manually against a University checklist. However,

we recognise that some resources provided may not currently be accessible to all students.

In this course we provide a range of resources in Blackboard Ultra Documents (web pages on

MyAberdeen), Word, PowerPoint and PDF format which are keyboard navigable accessible to

students using a screen reader.

* Resources are arranged in a logical order, grouped by topic, and labelled clearly.
* Lecture slides will be provided at least 5 days in advance.
* Lectures will be captured using Panopto software. Recorded lectures will be captioned.
* We may sometimes use automated speech recognition to provide captioning. Our automated video captioning software is not always fully accurate. We will seek to correct major errors and make students aware where this has been done.
* We endeavour to describe any visual content displayed in the presentation.
* We aim to include descriptions of all important visual content either via alternative text or within the lecture materials.

Alternative Formats

MyAberdeen automatically provides students with access to alternative file formats using the Ally “A”

icon next to each uploaded file. Further information about the range of alternative formats is

available on Blackboard help pages.

How to Raise an Issue?

Students may want to contact their course coordinator ([sam.miller@abdn.ac.uk](mailto:sam.miller@abdn.ac.uk)) to ask about the accessibility of learning materials.

Alternatively, you can contact [accessible-elearning@abdn.ac.uk](mailto:accessible-elearning@abdn.ac.uk) stating which course and

resources you are referring to. Please contact us if you have an accessibility query including:

• If you are experiencing issues with accessing the learning materials.

• If you find an accessibility problem not listed in this statement.

• If you have positive feedback on the accessibility considerations made.

When you contact us there is a process in place that will acknowledge your contact, tell you who is dealing with it and give you a timescale by which you can expect a reply.

# Course Teaching Staff

Course Co-ordinator:

Dr Sam Miller (SM) [**sam.miller@abdn.ac.uk**](mailto:a.lorenz@abdn.ac.uk)

Other Staff:

Dr Delma Childers (DC)

Dr Iain Greig (IG)

Dr Riko Hatakeyama (RH)

Dr Takashi Kubota (TK)

Dr Alexander Lorenz (AL)

Dr Soumya Palliyil (SP)

Dr Alan Walker (AW)

# Assessments & Examinations

Assessment

The course is assessed by two means; continuous assessment and written examination. The continuous assessment represents 35% of the total mark and is made up of marks from the written reports of your laboratory work and the essay. The practical report carries 25% of the final mark. The essay carries 10% of the marks. Both pieces of work will be submitted online.

Examination

The written examination provides 65% of the total mark and is of three hours duration and will be held at the end of the 12-week second half-session in May/June. The examination paper will contain 7 questions of equal weighting, from which you must answer 4. Details regarding time and place will be given to you in plenty of time.

A resit examination in the same format as the main examination will be provided for those students who are unsuccessful in the June examination. This resit examination may contain material from both the practical and lecture components of the course.

The total assessment of the course, recorded as a single CGS grade, is based on two elements of the course as follows: Continuous assessment marks contributing 35% of the total and the written examination contributing 65%. To achieve an overall pass for the course you MUST obtain a CGS score of D3 or better for the entire course.

# 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
* 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

\* Available through the library as hard copy (maybe as multiple editions) and/or as electronic version

The recommended text for this course is;

\*Madigan MT, Martinko JM, Bender KS, Buckley DH & Stahl DA (2017) Brock Biology of Microorganisms. 15th Edition, Pearson Education, ISBN13: 9780134261928, ISBN10: 0134261925.

The following books are strongly recommended for reference and for further reading on selected aspects of the course;

\*Dixon B (1998) Power Unseen: How Microbes Rule the World. Oxford University Press, Revised Ed ISBN: 9780716745501

\*Gow NAR & Gadd GF (1995) The Growing Fungus. Springer ISBN: 978-0-412-46600-7

\*Postgate J (2000) Microbes and Man. Cambridge University Press, 4th Ed ISBN: 9780521665797

\*Postgate, J (1995) The Outer Reaches of Life. Cambridge University Press, ISBN: 9780521440103

\*Willey J, Sherwood L, Woolverton CJ (2013) Prescott’s Microbiology. McGraw-Hill Education

Slonczewski, J.L. and Foster, J.W. (2017) Microbiology. An Evolving Science. W.W. Norton & Company, 4th Edition ISBN: 978-0-393-61403-9

\*Ptashne, Mark (2004), A Genetic Switch, Phage Lambda Revisited, Third Edition, CSH Press, ISBN: 978-087969716-7

\*Storz, G, Hengge, R. (2011) Bacterial Stress Responses 2nd Edition, ASM Press, ISBN: 9781555816216

\*Agrios GN (2005) Plant Pathology. Academic Press, ISBN: 9780120445653

\*Koch, A (1995) Bacterial Growth and Form. Springer ISBN: 0412028719, 9780412028717

\*Atlas RM & Bartha R (1998) Microbial Ecology: Fundamentals & Applications. 4th Edition, Benjamin/Cummings ISBN: 0805306552, 9780805306552

# Lecture Synopsis

Bacterial Cell Stress and Survival - Dr S Miller

The aim of these lectures is to examine the mechanisms that bacterial cells such as *Escherichia coli* have evolved to enable survival of a diversity of stresses such as changes in external pH, osmolarity and exposure to toxic compounds. The series of lectures will focus on the mechanisms that bacteria have evolved to enable cell growth despite diverse environmental challenges. We will study the nature of environmental signals that are sensed by cells that allow them to respond to stressful environments, the molecular mechanisms cells use to combat such stresses and the integration of signals.

Microbial Prions – Dr D Childers

Prions are infectious proteins that can convert other copies of the same protein into prion particles. Prions were originally identified as the causative agent of severe neurodegenerative diseases in mammals and humans. Yeast and other fungi can also develop prion diseases, but many yeast prions confer non-disease phenotypes that significantly influence gene regulation and environmental adaptation. The aim of these lectures is to review the biology behind prion propagation and transmission and explore key examples of yeast prions that underpin fungal adaptation, evolution, and a link to understanding human prion diseases.

Microbial Biotechnology – Dr S Palliyil

Modern biotechnology has revolutionised pharmaceutical research and drug production. Many lifesaving drugs available in the market for treating diseases such as cancer, autoimmune disorders, cardiovascular diseases etc. are results of advancements in molecular biology and protein expression technologies. These lectures will explore how innovations in recombinant DNA technology and exploiting the intrinsic characteristics of microorganisms have enabled early stage drug discovery process to generate blockbuster drugs of biologics origin for treating life threatening diseases.

Fungal Cell Architecture – Dr R Hatakeyama

The aim of these lectures is to understand the physical structure of fungal cells. Fungal cells are remarkably different from bacterial cells, because they are evolutionarily distant (yeast is much more similar to us than to *E. coli*!). One of the biggest inventions of eukaryotes are various subcellular structures called organelles, which physically separate the intracellular space by membranes and compartmentalize cellular functions. In these lectures, we will learn how fungal organelles are generated and maintained, and how they execute unique functions.

Bacterial growth and development - Dr S Miller

*E. coli* undergoes a simple cell cycle of growth and division. Other bacteria have a more complex cell cycle leading to differentiated cell types. The objective of these lectures is to review bacterial developmental processes and in particular the molecular signals that lead to the choice of a developmental pathway. To illustrate how developmental choices are made we will study a range of processes including bacterial cell shape, sporulation and the lysogenic-lytic switch of bacteriophage lambda in response to the bacterial host state.

Fungal Biology & Genetics - Dr A Lorenz

The aim of these lectures is; (I) to survey the structure and function of genetic components in fungi, (II) to explore which fungi are excellent models to further our understanding of the molecular mechanisms behind genetics and why these models are so convenient, and (III) to look at evolutionary aspects of fungal genome diversity and dynamics especially in the context of biotechnology and fungal pathogenesis.

Lecture 1: APOYG – The Awesome Power of Yeast Genetics: Why have fungi, yeasts in particular, been so “successful” as model organisms for basic biological science? What are their distinct advantages? And how can they be exploited for basic research and biotech?

Lecture 2: Cell growth and reproduction in fungi: How do fungi propagate and sexually reproduce? Discussion of genetic networks regulating mating, meiosis and sporulation.

Lecture 3: Genetic and genomic adaptations in environmental niches: What are the chromosomal and genetic changes fungi undergo to adapt to niches and how can we harness this to exploit and combat fungi? This is highly relevant for biotechnology (fermentation, synthetic biology) and medical mycology (pathogenesis, drug resistance).

Microbial Interactions - Dr A Walker

Microbes do not normally exist in isolation in nature. As a result, microbes have evolved a fascinating range of mechanisms to interact with each other, in both antagonistic and cooperative ways. These lectures will explore some of these interactions in detail, including themes such as competitive production of antimicrobial compounds (e.g. bacteriocins), synergistic cross-feeding and metabolic cooperation that allows microbes in partnership to utilise nutrients they would be unable to access alone, and the ability of bacteria to communicate with each other through small ‘hormone-like’ organic signalling compounds. The lecture series will also highlight how manipulation of these microbial interactions in the human body can have therapeutic potential.

Antimicrobial agents - Dr I Greig

Lectures 1 – 4: treating infectious diseases. These four lectures will cover the stories, the drugs and the issues associated with the treatment of a range of infectious diseases, caused by bacteria (with a special topic of tuberculosis), viruses, fungi and protozoa (with a special topic of malaria).

# Practical Work

As part of the course all students will follow a single practical exercise which is spread over the seven weeks of the course, with five live practical sessions in the lab. The practical will involve genetic manipulation to introduce a point mutation into a specific gene in budding yeast *Saccharomyces cerevisiae*, followed by phenotypic analysis of the mutant. Introducing mutations will be achieved by CRISPR-Cas9 genome editing, the discoverers/inventors of which won the Nobel Prize in Chemistry 2020. During the practical course students will have the opportunity of gaining experience in this genome editing technique and analyzing the resulting changes in phenotype. At the end of the practical sessions, each student will submit a practical report in the format of a typical research paper, which will be assessed. The practical report is part of the continuous assessment for this course and contributes 25% of the final mark. Details of the report required will be given in the practical sessions.

Please see the MC3504 Practical Manual for further details.

# Essay

Each student will complete a 1500 word essay (main text, not including references and figure legends) to be submitted on the day stated in the timetable. The essay carries 10% of the marks for the course. Further information about essay requirements will be given in the Essay info and FAQ session and via MyAberdeen. Essays should be submitted double-spaced via Turnitin in MyAberdeen. Computer failure is not an accepted excuse for late submission of essays.

Academic writing skills training is available through the Student Learning Service ([**https://www.abdn.ac.uk/sls/**](https://www.abdn.ac.uk/sls/)). Students should refer to "A Guide to Scientific Writing" by David Lindsay (Longman Cheshire) for more general guidance on writing essays.

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:

* Absence
* Appeals & Complaints
* Assessment
* Avoiding Plagiarism
* Communication
* Graduate Attributes
* MyAberdeen
* Student Learning Service (SLS)
* Student Monitoring/Class Certificates
* Student Discipline
* The Co-curriculum

Where to Find the Following Information:

C6/C7- University of Aberdeen Homepage > Students > Academic Life > Monitoring and Progress > Student Monitoring (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 Skills – Student Learning Service

The Student Learning Service (SLS) works with all students to enhance their academic skills including academic writing, maths skills and study skills.

https://www.abdn.ac.uk/students/academic-life/academic-skills-6273.php

# 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 |

# MC3504 Course Timetable: 2023-2024

* Times are UK Time and show the timings of live sessions

Timetable Key:

|  |
| --- |
| Blue = Live classes delivered in person on campus |
| Yellow = Assessments |
| Grey = No scheduled classes on MC3504 on these days |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Time | Place | Subject | Session |  | Staff | |
| Week 26 | | | | | | |
| Mon 22 Jan | 14:00-15:00 | 1:032/033 | Introduction to the course | Lecture |  | SM | |
| 15.00-16.00 | 1:032/033 | Bacterial Cell Stress and Survival -1 | Lecture |  | SM | |
| Tue 23 Jan | 10:00-13:00 | MR302 | Practical 1 – Introduction and CRISPR design | Practical |  | TK | |
| Wed 24 Jan |  |  |  |  |  |  | |
| Thu 25 Jan |  |  |  |  |  |  | |
| Fri 26 Jan | 14:00-15:00 | 1:039/040 | Bacterial Cell Stress and Survival -2 | Lecture |  | SM | |
| 15:00-16:00 | 1:039/040 | Bacterial Cell Stress and Survival -3 | Lecture |  | SM | |
| Week 27 | | | | | | |
| Mon 29 Jan | 14:00-15:00 | 1:039/040 | Bacterial Cell Stress and Survival - Workshop | Workshop |  | SM | |
| 15:00-16:00 | 1:039/040 | Essay info session | Lecture |  | SM | |
| Tue 30 Jan | 10:00-13:00 | STH  LAB 1.007 | Practical 2 – Yeast transformation | Practical |  | TK | |
| Wed 31 Jan |  |  |  |  |  |  | |
| Thur 1 Feb |  |  |  |  |  |  | |
| Fri 2 Feb | 14:00-15:00 | 1:039/040 | Microbial Prions - 1 | Lecture |  | DC | |
| 15:00-16:00 | 1:039/040 | Microbial Prions - 2 | Lecture |  | DC | |
| Week 28 | | | | | | |
| Mon 5 Feb | 14:00-15:00 | 1:032/033 | Microbial Prions - 3 | Lecture |  | DC | |
| 15:00-16:00 | 1:032/033 | Microbial Prions – Workshop | Workshop |  | DC | |
| Tue 6 Feb | 10:00-13:00 | STH  LAB 1.007 | Practical 3 – Colony Isolation | Practical |  | TK | |
| Wed 7 Feb |  |  |  |  |  |  | |
| Thur 8 Feb |  |  |  |  |  |  | |
| Fri 9 Feb | 14:00-15:00 | 1:039/040 | Biotechnology - 1 | Lecture |  | SP | |
| 15:00-16:00 | 1:039/040 | Biotechnology - 2 | Lecture |  | SP | |
| Week 29 | | | | | | |
| Mon 12 Feb | 14:00-15:00 | 1:032/033 | Biotechnology - 3 | Lecture |  | SP | |
| 15:00-16:00 | 1:032/033 | Biotechnology – 4 | Lecture |  | SP | |
| Tue 13 Feb | 10:00-13:00 | STH  LAB 1.007 | Practical 4 – Genomic DNA preparation and PCR | Practical |  | TK | |
| Wed 14 Feb |  |  |  |  |  |  | |
| Thur 15 Feb |  |  |  |  |  |  | |
| Fri 16 Feb | 14:00-15:00 | 1:039/040 | Fungal Cell Architecture -1 | Lecture |  | RH | |
| 15:00-16:00 | 1:039/040 | Fungal Cell Architecture -2 | Lecture |  | RH | |
| Week 30 | | | | | | |
| Mon 19 Feb | 14:00-15:00 | 1:032/033 | Fungal Cell Architecture -3 | Lecture |  | RH | |
| 15:00-16:00 | 1:032/033 | Fungal Cell Architecture - 4 | Lecture |  | RH | |
| Tue 20 Feb | 10:00-13:00 | STH  LAB 1.007 | Practical 5 – Agarose gel electrophoresis | Practical |  | TK | |
| Wed 21 Feb |  |  |  |  |  |  | |
| Thur 22 Feb |  |  |  |  |  |  | |
| Fri 23 Feb | 14:00-15:00 | 1:039/040 | Bacterial Growth and Development -1 | Lecture |  | SM | |
| 15:00-16:00 | 1:039/040 | Bacterial Growth and Development –2 | Lecture |  | SM | |
| Week 31 | | | | | | |
| Mon 26 Feb | 14:00-15:00 | 1:032/033 | Bacterial Growth and Development – 3 | Lecture |  | SM | |
| 15:00-16:00 | 1:032/033 | Bacterial Growth and Development – workshop | Workshop |  | SM | |
| Tue 27 Feb | 10:00-13:00 | STH  LAB 1.007 | Practical 6 – Analysis of sequencing data and Plate Growth assay | Practical |  | TK | |
| Wed 28 Feb | SUBMIT ESSAY –end of day (midnight) | | | | | |
| Thur 29 Mar |  |  |  |  |  |  | |
| Fri 1 Mar | 14:00-15:00 | 1:039/040 | Microbial Interactions - I | Lecture |  | AW | |
| 15:00-16:00 | 1:039/040 | Microbial Interactions - 2 | Lecture |  | AW | |
| Week 32 | | | | | | |
| Mon 4 Mar | 14:00-16:00 | 1:032/033 | Practical report writing workshop and Q and A | Workshop |  | TK | |
| Tue 5 Mar |  |  |  |  |  |  | |
| Wed 6 Mar |  |  |  |  |  |  | |
| Thu 7 Mar |  |  |  |  |  |  | |
| Fri 8 Mar | 14:00-15:00 | 1:039/040 | Microbial Interactions - 3 | Lecture |  | AW | |
| 15:00-16:00 | 1:039/040 | Microbial Interactions - 4 | Lecture |  | AW | |
| Week 33 | | | | | | |
| Mon 11 Mar | 14:00-15:00 | 1:032/033 | Fungal Biology & Genetics -1 | Lecture |  | AL | |
| 15:00-16:00 | 1:032/033 | Fungal Biology & Genetics -2 | Lecture |  | AL | |
| Tues 12 Mar |  |  |  |  |  |  | |
| Wed 13 Mar |  |  |  |  |  |  | |
| Thur 14 Mar |  |  |  |  |  |  | |
| Fri 15 Mar | 14:00-15:00 | 1:039/040 | Fungal Biology & Genetics -3 | Lecture |  | AL | |
| 15:00-16:00 | 1:039/040 | Fungal Biology & Genetics – 4 | Lecture |  | AL | |
| Week 34 | | | | | | |
| Mon 18 Mar | 14:00-15:00 | 1:032/033 | Antimicrobial agents -1 | Lecture |  | IG | |
| 15:00-16:00 | 1:032/033 | Antimicrobial agents -2 | Lecture |  | IG | |
| Tue 19 Mar |  |  |  |  |  |  | |
| Wed 20 Mar |  |  |  |  |  |  | |
| Thur 21 Mar |  |  |  |  |  |  | |
| Fri 22 Mar | 14:00-15:00 | 1:039/040 | Antimicrobial agents - 3 | Lecture |  | IG | |
| 15:00-16:00 | 1:039/040 | Antimicrobial agents- 4 | Lecture |  | IG | |
| Week 35 | | | | | | |
| Mon 25 Mar | 14:00-15:00 | 1.032/033 | Course closing session | Lecture |  | SM | |
| Tue 26 Mar |  |  |  |  |  |  | |
| Wed 27 Mar | SUBMIT PRACTICAL REPORTS – end of day (Midnight) | | | | | |
| Thu 28 Mar |  |  |  |  |  |  | |
| Fri 29 Mar |  |  |  |  |  |  | |

Staff

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Dr Iain Greig (IG)

Dr Riko Hatakeyama (RH)

Dr Takashi Kubota (TK)

Dr Alexander Lorenz (AL)

Dr Sam Miller (SM)

Dr Soumya Palliyil (SP)

Dr Alan Walker (AW)

Venues

STH = Science Teaching Hub, Old Aberdeen

MR = MacRobert Building, Old Aberdeen

All other venues are in the Polwarth Building, Foresterhill site

# Campus Maps - Foresterhill



# Polwarth Floor Plans





