

# MIIM30013 Techniques in Microbiology & Immunology

<b>Credit Points:</b>	12.50																													
<b>Level:</b>	3 (Undergraduate)																													
<b>Dates &amp; Locations:</b>	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus. An enrolment quota of 80 students applies to this subject.																													
<b>Time Commitment:</b>	Contact Hours: 1 x one hour tutorials per week plus 1 x five hour practicals per week (which includes 4x1 hour lectures during semester). Total Time Commitment: 120 hours																													
<b>Prerequisites:</b>	<p><b>B. Science students:</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MIIM20001 Principles of Microbiology &amp; Immunology</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MIIM20003 Experimental Microbiology</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p><b>B. Biomedicine students (2009 on):</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BIOM20001 Molecular and Cellular Biomedicine</td> <td>Semester 1</td> <td>25</td> </tr> <tr> <td>MIIM20002 Microbes, Infections and Responses</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p><b>B. Biomed. Sci. students (pre 2009) one subject from:</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MIIM20001 Principles of Microbiology &amp; Immunology</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MIIM20002 Microbes, Infections and Responses</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MIIM20001 Principles of Microbiology & Immunology	Semester 1	12.50	MIIM20003 Experimental Microbiology	Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	BIOM20001 Molecular and Cellular Biomedicine	Semester 1	25	MIIM20002 Microbes, Infections and Responses	Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	MIIM20001 Principles of Microbiology & Immunology	Semester 1	12.50	MIIM20002 Microbes, Infections and Responses	Semester 2	12.50
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<b>Recommended Background Knowledge:</b>	The prerequisite and corequisite subjects provide a solid background in Microbiology and Immunology. An understanding of the molecules, genes and biology of the cell would be useful.						
<b>Non Allowed Subjects:</b>	<p>This subject is only available to students enrolled in the Bachelor of Biomedicine , the Bachelor of Science and the Bachelor of Biomedical Science.</p> <p>This subject cannot be taken if students have gained credit for the following Bachelor of Biomedical Science and Bachelor of Science (pre-2010) subject:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>526-324 Immunological Techniques</td> <td>Not offered 2011</td> <td></td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	526-324 Immunological Techniques	Not offered 2011	
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<b>Core Participation Requirements:</b>	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>						
<b>Coordinator:</b>	Dr David Tribe, Dr Karena Waller, Dr Nicole La Gruta, Dr Sumone Chakravarti						
<b>Contact:</b>	<p>Dr David Tribe <a href="mailto:detribe@unimelb.edu.au">detribe@unimelb.edu.au</a> (mailto:detribe@unimelb.edu.au)</p> <p>Dr Karena Waller <a href="mailto:klwaller@unimelb.edu.au">klwaller@unimelb.edu.au</a> (mailto:klwaller@unimelb.edu.au)</p> <p>Dr Nicole La Gruta <a href="mailto:nllg@unimelb.edu.au">nllg@unimelb.edu.au</a> (mailto:nllg@unimelb.edu.au)</p> <p>Administrative Coordinator: Ms Chantelle Linnett <a href="mailto:BiomedSci-AcademicServices@unimelb.edu.au">BiomedSci-AcademicServices@unimelb.edu.au</a> (mailto:BiomedSci-AcademicServices@unimelb.edu.au)</p>						
<b>Subject Overview:</b>	<p>This subject provides an overview of</p> <p>(i) methods used to characterise the diversity of microbes, and particularly those used for pathogenic microbes, and</p> <p>(ii) methods for dissection of the complex human and animal defences against microbial infection.</p> <p>Techniques covered include molecular methods and functional assays used for the identification of bacteria and viruses, together with the polymerase chain reaction (PCR) and DNA cloning and sequencing, gene expression following DNA transfection, and antigen detection using Western blots. Tissue culture cells will be infected and assayed for bacterial adherence, the preparation, characterisation, separation and assay of lymphocyte populations, detection of antigens in tissues by immunocytochemistry and flow cytometry and assay of immune responses by enzyme immunoassays. Upon completion of the subject students will have used molecular techniques (eg PCR, DNA sequencing, Western blot probing) to identify important characteristics of microbes, used common bioinformatics methods to analyse DNA and protein sequence data, as well as developed skills in the in-vitro manipulation and quantification of immune cells from various tissues. They will have experience in the detection and analysis of cell associated molecules by flow cytometry and immunohistochemistry, and an understanding of the serological diagnosis of disease.</p>						
<b>Objectives:</b>	Upon completion of this subject, students should be able to:						

	<ul style="list-style-type: none"> <li># Describe the principles and procedures involved in the identification and characterisation of bacteria, based on principles of microbial physiology</li> <li># Describe the use of molecular techniques to identify and characterise determinants associated with disease</li> <li># Describe the principles and procedures involved in isolating and characterising immune cells and their products</li> <li># Describe the purpose of controls in the interpretation of experimental data</li> <li># Keep clear laboratory records of experimental work</li> <li># Communicate scientific ideas and findings effectively in both oral and written form.</li> </ul>
<b>Assessment:</b>	1 x 2 hour end-of-semester exam (50%), 2 oral presentations (mid-semester and end of semester, 5% each) 2 written reports (to be submitted mid-semester and end of semester; up to 1,000 words each, 10% each report) Ongoing assessment of laboratory participation and record keeping throughout the semester (20%). Attendance is compulsory. Students who miss more than 20% of this subject will not be eligible for final assessment.
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>On completion of this subject, students should have developed the following generic skills:</p> <ul style="list-style-type: none"> <li># An ability to retrieve published scientific data using computer searches and library facilities.</li> <li># The capacity to integrate knowledge across disciplines.</li> <li># An ability to critically analyse scientific data.</li> <li># An ability to communicate effectively in both orally and in writing</li> </ul>
<b>Notes:</b>	<p>This subject is available to students enrolled in the:</p> <p>Pre-2008 B. Sc  Pre-2008 B. Biomed. Sc. (Stream 7).  NG B. Sc.  NG B. Biomed</p> <p>This subject is a practical subject and requires attendance at scheduled laboratory sessions.</p> <p>Whilst students will not be involved in the manipulation and handling of animals, tissues obtained from appropriately euthanased animals will be used in some experiments.</p> <p>These experiments will be approved by the University of Melbourne Animal Welfare Committee.</p> <p>Experiments contained in this unit will also be approved by the Biosafety and Gene Technology Committee.</p>
<b>Related Course(s):</b>	Bachelor of Science
<b>Related Majors/Minors/Specialisations:</b>	Animal Disease Biotechnology (specialisation of Animal Health and Disease major) Biomedical Biotechnology (specialisation of Biotechnology major) Biotechnology (pre-2008 Bachelor of Science) Defence and Disease Immunology (pre-2008 Bachelor of Science) Microbiology (pre-2008 Bachelor of Science) Microbiology, Infection and Immunology Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses