

# GENE30002 Genes: Organisation and Function

<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.																		
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week. Total Time Commitment: Estimated total time commitment of 120 hours																		
<b>Prerequisites:</b>	Both <table border="1" data-bbox="389 584 1485 790"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>GENE20001 Principles of Genetics</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>GENE20002 Genes and Genomes</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Bachelor of Biomedicine students:</p> <p>Both</p> <table border="1" data-bbox="389 887 1485 1093"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>GENE20001 Principles of Genetics</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>BIOM20001 Molecular and Cellular Biomedicine</td> <td>Semester 1</td> <td>25</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	GENE20001 Principles of Genetics	Semester 1	12.50	GENE20002 Genes and Genomes	Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	GENE20001 Principles of Genetics	Semester 1	12.50	BIOM20001 Molecular and Cellular Biomedicine	Semester 1	25
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<b>Corequisites:</b>	None																		
<b>Recommended Background Knowledge:</b>	None																		
<b>Non Allowed Subjects:</b>	None																		
<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>	Prof Michael Hynes																		
<b>Contact:</b>	<b>Email: <a href="mailto:mjhynes@unimelb.edu.au">mjhynes@unimelb.edu.au</a> (mailto:mjhynes@unimelb.edu.au)</b>																		
<b>Subject Overview:</b>	This subject focuses on gene structure, function and regulation, which form the molecular basis of many important biological phenomena such as short-term organismal and cellular responses to rapid changes in environmental conditions and long-term controls of development. The molecular mechanisms underlying these phenomena are frequently exploited in biotechnology, medical and agricultural applications. The modern molecular techniques used to study these processes will be presented. The topics to be covered in this subject include prokaryotic and eukaryotic gene structure; action and regulation; genomic and recombinant DNA methodology; molecular genetic manipulation of a wide variety of organisms to generate defined changes in the genome; the cell cycle and developmental genetics.																		

<b>Objectives:</b>	Upon completion of this subject students should have: developed a general understanding of our current knowledge of the molecular structure of genes and the molecular basis of genetic processes, including the various mechanisms that regulate the expression of genes, in both prokaryotes and eukaryotes; an appreciation of the diversity of recently discovered molecular mechanisms for generating gene products and controlling their expression and for gene evolution; an understanding of techniques involved in combining classical genetics with recombinant DNA analysis and genomics and the application of these tools to solve specific biological problems; an appreciation for, and understanding of, the way in which information for this field is obtained and presented through the study of primary research papers and review articles; and acquired the basic concepts and knowledge to enable them to critically appraise newly reported findings in molecular genetics and do advanced courses in a wide range of areas of cellular and molecular biology.
<b>Assessment:</b>	One multiple-choice class test held mid-semester (10%); two online assignments/problem-solving tasks due during the semester (15%); a 3-hour written examination in the examination period (75%).
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject potentially can be taken as a breadth subject component for the following courses: # <b>Bachelor of Arts</b> ( <a href="https://handbook.unimelb.edu.au/view/2011/B-ARTS">https://handbook.unimelb.edu.au/view/2011/B-ARTS</a> ) # <b>Bachelor of Commerce</b> ( <a href="https://handbook.unimelb.edu.au/view/2011/B-COM">https://handbook.unimelb.edu.au/view/2011/B-COM</a> ) # <b>Bachelor of Environments</b> ( <a href="https://handbook.unimelb.edu.au/view/2011/B-ENVS">https://handbook.unimelb.edu.au/view/2011/B-ENVS</a> ) # <b>Bachelor of Music</b> ( <a href="https://handbook.unimelb.edu.au/view/2011/B-MUS">https://handbook.unimelb.edu.au/view/2011/B-MUS</a> ) You should visit <b>learn more about breadth subjects</b> ( <a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a> ) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
<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>	Completion of this subject is expected to enhance the generic skills of a student in: the ability to understand how our current scientific models rely on the basic principles established by previous classical experiments; the ability to understand how complex new scientific data is acquired and presented in the form of new testable paradigms; the ability to read and interpret scientific literature in order to answer detailed questions on both theory and methodology; an appreciation for how modern science is informed by cross-disciplinary studies leading to technological advances; the use of information technology to acquire relevant knowledge for their understanding of the current status of the field and its relevance to society.
<b>Notes:</b>	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BAsC or a combined BSc course. This subject is available for credit in the Bachelor of Biomedicine. Previously known as 652-302 Molecular Genetics (prior to 2009). This subject is required for a Genetics major.
<b>Related Course(s):</b>	Bachelor of Science Master of Biotechnology
<b>Related Majors/Minors/Specialisations:</b>	Animal Cell Biology (specialisation of Cell and Developmental Biology major) Biotechnology (pre-2008 Bachelor of Science) Cell Biology (pre-2008 Bachelor of Science) Genetics Molecular Biotechnology (specialisation of Biotechnology major) Plant Cell Biology and Development (specialisation of Cell and Developmental Biology major) Reproduction and Development (specialisation of Cell and Developmental Biology major) Science credit subjects* for pre-2008 BSc, BAsC and combined degree science courses
<b>Related Breadth Track(s):</b>	General Genetics General Genetics