

GENE30002 Genes: Organisation and Function

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 3 x one hour lectures per week. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	Both # 652-214 Principles of Genetics (/view/2010/652-214) # 652-215 Genes and Genomes (/view/2010/652-215) Bachelor of Biomedicine students: Both # 652-214 Principles of Genetics (/view/2010/652-214) # 526-222 Molecular and Cellular Biomedicine (/view/2010/526-222)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Prof Michael Hynes
Contact:	Email: mjhynes@unimelb.edu.au (mailto:mjhynes@unimelb.edu.au)
Subject Overview:	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.
Objectives:	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.
Assessment:	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%).
Prescribed Texts:	None
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2010/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	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.
Notes:	<p>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.</p> <p>This subject is available for credit in the Bachelor of Biomedicine.</p> <p>Previously known as 652-302 Molecular Genetics (prior to 2009).</p> <p>This subject is required for a Genetics major.</p>
Related Course(s):	Bachelor of Science Graduate Diploma in Biotechnology
Related Majors/Minors/Specialisations:	<p>Animal Cell Biology</p> <p>Biotechnology</p> <p>Biotechnology</p> <p>Cell Biology</p> <p>Cell and Developmental Biology</p> <p>Genetics</p> <p>Genetics</p> <p>Genetics</p> <p>Molecular Biotechnology</p> <p>Plant Cell Biology and Development</p> <p>Reproduction and Development</p>