GENE30002 Genes: Organisation and Function

Credit Points:	12.5
Level:	3 (Undergraduate)
Dates & Locations:	2016, 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 170 hours
Prerequisites:	Admission into MC-SCIBIT **OR** **Subject** / **Study Period Commencement:** / **Credit Points:** GENE20001 Principles of Genetics / Semester 1 / 12.50 and one of: **Subject** / **Study Period Commencement:** / **Credit Points:** BIOM20001 Molecular and Cellular Biomedicine / Semester 1 / 25 GENE20002 Genes and Genomes / Semester 2 / 12.5 If you believe you have met the equivalent of these prerequisites with study undertaken elsewhere than the University of Melbourne, please contact the subject coordinator with full details of the studies that you have undertaken, including copies of your transcripts and full subject syllabi.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Assoc Prof Alex Andrianopoulos
Contact:	**alex.a@unimelb.edu.au (mailto:alex.a@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.
Learning Outcomes:	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:	Two equally weighted multiple-choice class test of 25 questions due weeks 4-5 and 8-10 (20%) Two equally weighted online assignments/problem-solving tasks due mid-semester consisting of 15 multiple choice questions related to an assigned reading (20%) 2-hour written examination in exam period (60%)
Prescribed Texts:	None
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2016/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2016/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2016/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2016/B-MUS)** 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.
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:	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.
Related Course(s):	Master of Biotechnology
Related Majors/Minors/ Specialisations:	Animal Cell Biology (specialisation of Cell and Developmental Biology major) Biotechnology (pre-2008 Bachelor of Science) Cell Biology (pre-2008 Bachelor of Science) Genetics Genetics Genetics Genetics Genetics

	Immunology Microbiology 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-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED
Related Breadth Track(s):	General Genetics