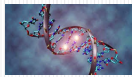


Introduction to SLE254 Genetics and Genomics

Lecture 1 SLE254 Genetics and Genomics Trimester 2 Dr Marina Telonis-Scott



1

Dr. Marina Telonis-Scott – Unit Chair and Burwood coordinator/ Lecturer

- Burwood campus
- Telephone: 924 46455
- Email: m.telonisscott@deakin.edu.au

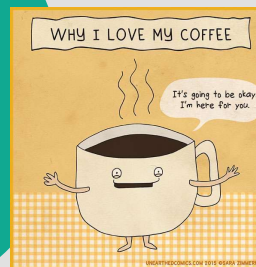


- Hours:
 - Monday - Friday
 - Best to make an appointment to speak with me
 - Email and via the unit discussion board (Monday – Friday until 6 pm)
 - Delays on prac weeks!

2

Coffee with Marina weekly?

- *Coffee Conversations beginning in week 2
- *4-5 students per week
- *Free hot/cold drink at Corner Café Burwood
- *Your space to speak and I'll listen!
- *A chance to yarn with each other and learn from each other.



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3

Three Reasons to attend PASS

1. Improve grades

Research shows that students who attend PASS generally achieve a higher final grade than those who don't attend

2. Maximise Study Time

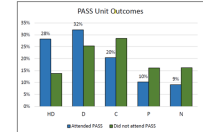
Set times to study each week with peers to help consolidate understanding and reinforce concepts.

3. Develop effective study techniques

Considering other study methods and techniques will enhance your approach and save time.

PASS unit grades for deakin students, Trimester 2 2023 - Unit sessions

	Unit grade	Attended PASS	Did not attend PASS
High Distinction	HD	28.2%	11.8%
Distinction	D	22.2%	25.9%
Credit	C	29.4%	28.9%
Pass	P	12.2%	18.2%
Fail	F	9.2%	15.2%

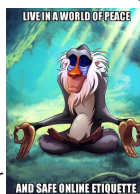


Deakin University/CRICOS Provider Code 00128

4

Online class etiquette

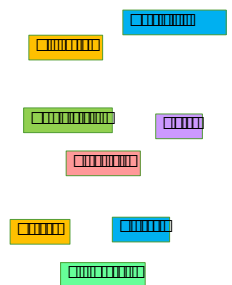
- We are a very big unit!
- We have a lot of very exciting material to cover
- Please keep the **chat** strictly to SLE254 content
- If you need to speak to me regarding any other matters contact me out of class.
- If you form 254 study/social media groups put the details on the student discussion board ☺



5

A word on correspondence

- Be sure to use your Deakin email address when at Deakin University.
 - Lecturers email students important information but they will only use the @deakin.edu.au address
 - Get your Deakin account forwarded to your hotmail/gmail/etc.
- Be polite and courteous – you are in a professional organisation and we're turning you into professionals.
 - Start your correspondence with a greeting
 - Don't forget your manners
 - End with your name



6

Email vs discussion board

Email

Personal stuff that only affects you eg:

"I broke my arm on the weekend and I not sure I can do everything I need to do in prac. What should I do?"

"I had a severe case of food poisoning and was in hospital all week so I couldn't go to my mid trimester test. What should I do?"

NOTE: Put SLE254 into your email subject and include your student number in your email!

Discussion

Any general questions about assignments, pracs or content:

"I don't get how to work out the gametes for a Punnett square for a dihybrid cross. Can you go over it again?"

"What will the format of the exam be?"

"What is the red smudge that appears in lane 2 of the gel electrophoresis results?"

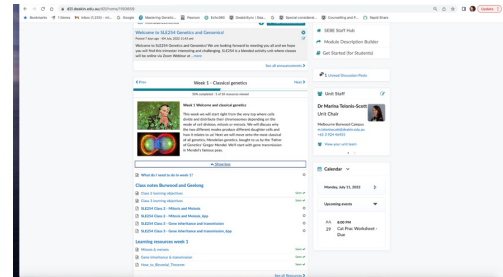
"When will the results of the test be released?"

NOTE: Don't put personal information such as your student number on the discussion board!

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How to SLE254!

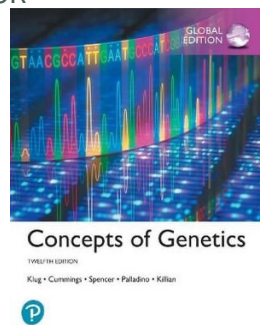
The SLE254 Unit Site is your best buddy



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Prescribed textbook

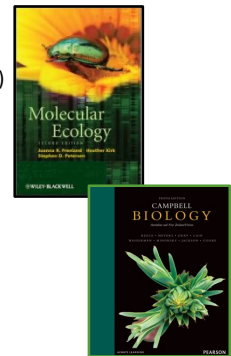
- Klug, Cummings, Spencer, Palladino. Concepts of Genetics, 12th Ed (2019)
- The electronic format is available through the library
- Link to the book under the Reading list. The access is limited to 10 concurrent users
- The library also has a number of print copies of different editions



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Other helpful books

- Freeland, Kirk, Peterson. Molecular Ecology, 2nd Ed (2011)
- Reece, Meyers, Urry, Cain, Wasserman, Minorsky, Jackson, Cooke. Campbell Biology 9th Ed (2011)



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When and where are the Lectures?

SLE254 - Genetics And Genomics

Unit Information | **Online Classroom** | Practicals

Class 1 + 2 Wednesday 9am-10:50am
Class 3 Wednesday 5pm- 5:50pm

Home | Content | Discussions | Assessment | Tools | Setup 2024 T2

Zoom

Upcoming Meetings

Start Time	Topic	Meeting ID	Start	Delete
Tomorrow (Planning)	SLE254 - Genetics And Genomics	613 3748 1862	Start	Delete
Tomorrow (Planning)	SLE254 - Genetics And Genomics	620 4196 0020	Start	Delete
Wed, Jul 17 (Planning)	SLE254 - Genetics And Genomics	613 3748 1862	Start	Delete

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SLE254 Schedule: KEEP THIS CLOSE TO YOU!!! (UNIT INFORMATION)

Week	Class No.	Date	Topic	Text Book Ed 11	Text Book Ed 12	Practical
Week 1	1	Wed 10 th Jul	Welcome and unit introduction			
	2	Wed 10 th Jul	Mitosis and Meiosis	p50-73 Ch2	50-71 Ch2	
	3	Wed 10 th Jul	Gene inheritance and transmission	p74-103 Ch3	73-96 Ch3	
Week 2	4	Wed 17 th Jul	Pedigree analysis	p93-103 Ch3	88-90 Ch3	
	5	Wed 17 th Jul	Extensions of Mendelian Genetics	p104-137 Ch4	98-128 Ch4	Prac 1 starts: Epistatic interactions between genes.
	6	Wed 17 th Jul	Sex determination	p198-221 Ch7	131-150 Ch5	
Week 3	7	Wed 24 th Jul	Karyotypes	p38, 54 & 405	40f, 54, 54f & 618f	Prac 1 quiz due Friday 26 th July 8pm 'Cat Prac'
	8	Wed 24 th Jul	Chromosomal abnormalities	p222-247 Ch8	151-174 Ch6	
	9	Wed 24 th Jul	DNA structure & Chromosomal organisation	p265-294 Ch10	251-274 Ch10	
Week 4	10	Wed 31 st Jul	DNA replication	p322-41 Ch12	302-319 Ch12	
	11	Wed 31 st Jul	Catch up and Q&A	p295-321 Ch11	276-300 Ch11	Prac 2 starts: Chicken DNA (part I)
	12	Wed 31 st Jul	Revision			
Week 5	13	Wed 7 th Aug	Class test 1 covering lectures 2 to 11 (10% of final mark)			
	14	Wed 7 th Aug	Transcription and translation	p342-400 Ch13,14	321-377 Ch13	
	15	Wed 7 th Aug	DNA repair and mutations	p401-429 Ch15	378-409 Ch15	
Intra-trimester Break (August 12th to the 18th)						

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Lecture notes

- Resources: Genetics SLE254 unit site
- Every effort is made to ensure lecture notes will be available prior to a lecture
- Lectures will live streamed using Zoom and recorded in the Zoom module.



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Genetics assessment

- Class test 1**
 - Wednesday 7th Aug
 - Covers Weeks 1 – 5 (Lectures 2 – 11)
- Class test 2**
 - Wednesday 11th Sep
 - Covers Weeks 6 – 8 (Lectures 14 – 23)
- Practical Reports** – worksheet and poster (Prac1, Prac 2 -4)
- Due end of week 3 and 10 respectively
- EoUA**
 - To be announced

10%

10%

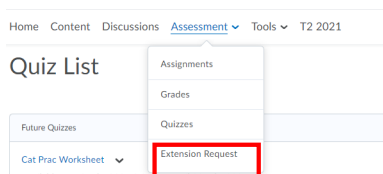
40%

40%

There may be questions on the In-class test and exam that deal with topics covered in the practicals

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Extensions- please **no emails** use the extension request form



15

Your practical team

- Dr Andrew Oxley**, Warun Ponds coordinator, lecturer and practical coordinator
andrew.oxley@deakin.edu.au
- tel: +61 3 522 73670



- Practical Technicians:** Maria Amodio, Brittney Jenkins and Megan Ellis

Practicals are compulsory!!

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Practicals

- Practicals are NOT held every week – [check schedule!](#)
- Practicals start 'Week 2'
- Not allocated a prac class in STAR?
- Manuals for practical classes
 - A PDF of the manual will be posted on SLE254 unit site
please print your own

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Practicals

- Bring appropriate lab wear**
- Bring appropriate practical sheets to each class**

- Practicals are worth 40% of overall mark
 - Practical 1 (8%) question and answer report
 - Poster format for Practicals 2-4 (32%)



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Prac 1

- **Submission of reports: Assignment 1 'Cat Prac'**
- Prac Q & A report worksheet **is due by Friday 26th July 8pm**
- Make sure to take notes and complete all questions during Prac 1
- Once you have all of your answers ready, log into the unit site and complete the Cat prac worksheet under the Assessments/Quizzes folder
- Each student will be allocated random questions, thus make sure that you have completed all stations and have all your notes/answers ready from the practical session
- You will have **2 hrs to complete the worksheet**, after 120 minutes you will be prevented from making further changes – **ONCE YOU START YOU MUST FINISH** (you cannot log out of the test, then log back in, the timer is continuous)
- This is worth 8 % of your final mark

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Practicals

- **Assignment 2:** The poster report is due on **20th September at 8 pm** via the Assignment folder facility the unit site.
- Standard late penalty applies. No other form of submission of the scientific report will be accepted (e.g. emailed or hard copy submissions).
- **Do not submit** your report to your lecturer, demonstrator or to the technicians.

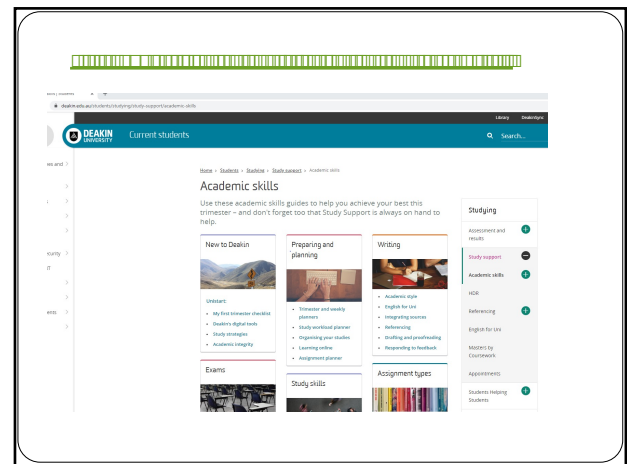
20

Need help?

- Struggling with SLE254?
- Having trouble juggling all your units?
- Questions?
- **Please contact me early in the trimester.**



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So – I'm overwhelmed: what should I do?

- **Using these strategies will help! Talk to Marina or Andrew!**

- **Learn good time management** – plan ahead and organize your time
<https://www.deakin.edu.au/students/studying/study-support/academic-skills>



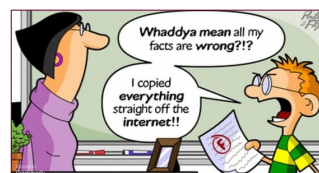
<http://findyourbest.com>

- If you **don't understand** an assessment task – **talk to your unit chair or tutor**
We can't help if **we don't know that there's a problem!**
- **Learning English isn't always easy**, so if you have language difficulties – contact study-support language and communication
<https://www.deakin.edu.au/students/studying/study-support/english-for-uni>

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Feeling under pressure and tempted to take short cuts?

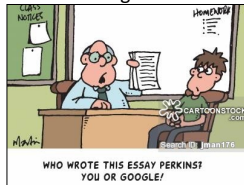
- **Think again!**
- Using another student's work with or without their consent and submitting it as your own is dishonest = **plagiarism/fraud**
- **Using gAI and not citing your program, prompt or quality control**
- Working with others to produce work intended to be an **individual** assessment task = **collusion**



<https://www.cartoonstock.com/directory/pl/plagiarism.asp>

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- Paying others to complete an assessment task e.g. lab report and then knowingly submitting it as your own work = **contract cheating**
- All universities take plagiarism, collusion and contract cheating extremely seriously = **academic misconduct**
- **Penalties can be severe** e.g. exclusion from the university



<https://www.pinterest.com/pin/49187870202870532/>

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STP050 Academic Integrity

- A **compulsory**, zero credit point unit
- **6 modules** to build your knowledge and practise making judgements about integrity
- A quiz becomes available when you've answered **all questions in these modules**
- **Only 15 questions**
- **Unlimited attempts** to score **85%** for an **ungraded pass (UP)** and a **Certificate of Completion**
- It will take you **less than 2 hours**
- **Nothing to submit**
- **Log in now and complete the unit!**

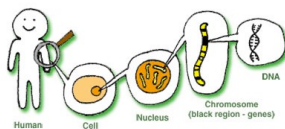
Your integrity...at Deakin and beyond



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What is genetics?

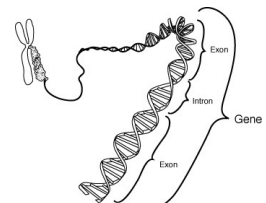
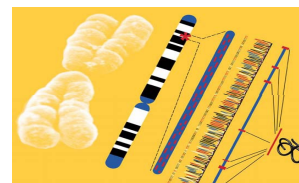
- The study of **heredity**: how traits (including diseases) are passed from generation to generation
- The study of **genes** and their effect on **phenotype**



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What is a Gene?

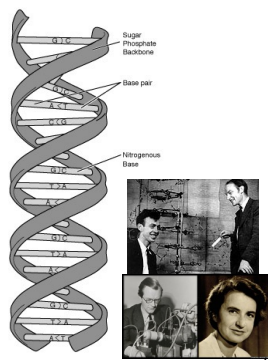
- A gene is "The fundamental unit of heredity"
- A section of DNA that encodes a polypeptide (proteins) or RNA molecules
- Phenotypes are produced by the action of proteins
- E.g. hair colour, height, ability to make certain proteins



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DNA : deoxyribonucleic acid

- DNA transmits genetic information across generations
- DNA contains genes that controls the phenotype by encoding proteins
- DNA is able to change (mutate) creating variation between species and individuals
 - (Evolution)



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Genes

Genes can be

- Copied
 - Copied from parent to offspring
- Mutated
 - Confer an advantage for survival
 - Disease
- Expressed
 - Switched on to make polypeptides
- Transposed
 - Moved from one place to another

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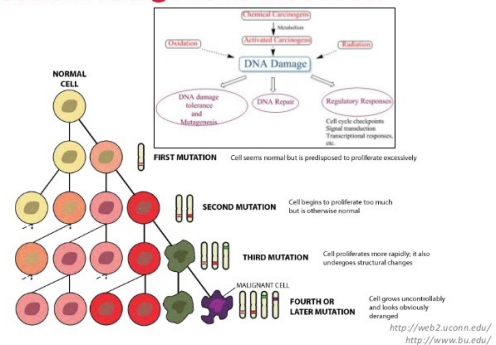
Different approaches to genetics

- Transmission genetics
- Molecular genetics
- Behavioural genetics
- Developmental genetics
- Ecological genetics
- Evolutionary genetics
- Phylogenetics
- Medical genetics
- Microbial genetics
- Population genetics
- Quantitative genetics
- Mitochondrial genetics
- Genetic Engineering
- Conservation genetics

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A few examples

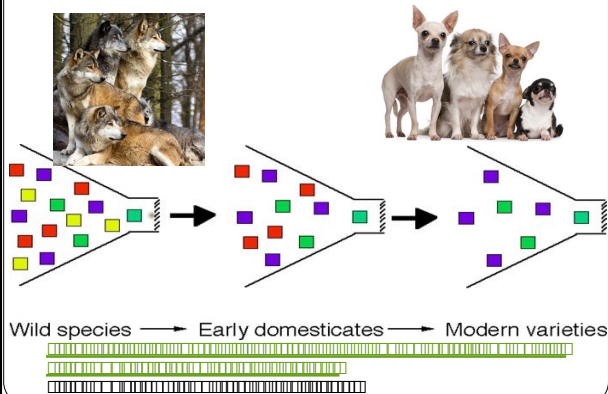
Cancer is a genetic disease...



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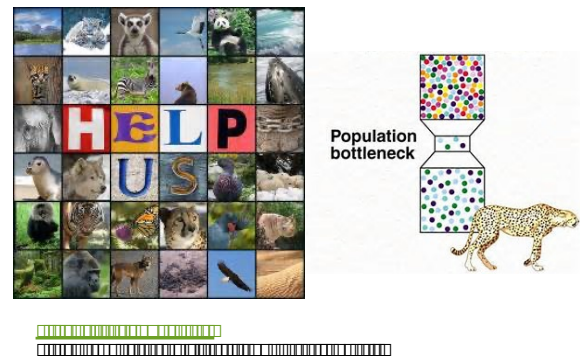
A few examples

- Quantitative genetics



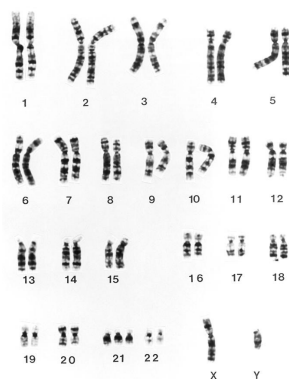
33

A few examples



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Quiz: What do you see on this slide?



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Summary

- Just an introduction today
- Contact details
- Assessments
- Practicals
- Deakin resources
- Importance of genetics



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