BIOL 3042 Molecular Ecology
BIOL 5042 Marine Conservation Genetics

Description from calendar:
We survey techniques of molecular genetic analysis and consider how they can be used to identify species, populations, sexes, individuals and family relationships, and study population attributes such as historical dispersal, contemporary connectivity, mating behaviour and effective population size. Evaluation is based on assignments, a test and a final exam.

Instructor info:

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Lecture Schedule

WEEK		LECT #	INST	TOPIC	Beebee Chapter	Assignments
1		Lect 1	PB	Course intro, what is Mol Ecol, reasons for studying genetic variation	1	
2		Lect 2	PB	PCR, sequencing, real-time PCR	2	
2		Lect 3	PB	mtDNA (1)	2	Assignment 1 start
3		Lect 4	PB	mtDNA (2), phylogenetic analysis	2	
3		Lect 5	PB	Phylogenetic analysis (2), barcoding and study of biodiversity	3	Assignment 1 due
4		Lect 6	PB	Microsatellites; begin intraspecific diversity	3	
4		Lect 7	PB	Phylogeography: bridge between phylogenetics and population genetics		
5		Lect 8	GM	Greg introduces GenAlEx software	7	
5		Lect 9	PB	Phylogeography (2)	7	
6		Lect 10	PB	Other approaches to identifying species and studying biodiversity (RFLP,EPIC, RAPD, SNP)	1	
6		Lect 11	PB	midterm review session		
7		Lect 12	PB	**MIDTERM**		
7		Lect 13	DR	Neutral Evolution: HWE, drift, effective pop size	5	Assignment 2 start
8		Lect 14	DR	Neutral Evolution: HWE, drift, effective pop size	5	
8		Lect 15	DR	Population subdivision, F-statistics & gene flow	5	Assignment 2 due
9		Lect 16	DR	Population subdivision, F-statistics & gene flow	5	Assignment 3 start
9		Lect 17	DR	Population subdivision: Model based clustering		
10		Lect 18	DR	Population subdivision: Model based clustering		
10		Lect 19	DR	Population subdivision: Gene flow and assignment methods	5	Assignment 3 due
11		Lect 20	DR	Kinship and pedigree analysis		Assignment 4 start
11		Lect 21	DR	Landscape Genetics: Case studies	5	
12		Lect 22	DR	Natural Selection: Quantitative genetics, Inbreeding & inbreeding depression	8	
12		Lect 23	DR	Natural Selection: Quantitative genetics, Inbreeding & inbreeding depression	6	Assignment 4 due
14		Lect 24	DR	Invasive species		
14		Lect 25	DR	**tba**		Grad stud essay due

Assignments & Grading

Assignments

#	Topic	**undergrad**	**grad**
1	microsatellite primer design	10%	5%
2	basic population genetics (Genalex)	10%	5%
3	Effective Population size	15%	10%
4	Structure	15%	10%
	4 assignments	50%	30%
	1 MIDTERM	20%	20%
	FINAL EXAM	30%	30%
	Essay + oral presentation- GRAD Students		20%