BIOLOGY 7117 - SPECIATION - Fall 2025

INSTRUCTOR: Michael Hellberg mhellbe@lsu.edu
328 Life Sci 578-1757
CLASS TIME: TTh 10:30-11:50 AM, A347 Life Sci Annex

DATE	TOPIC	Readings
26 Aug	1.1 Species concepts	Mallet 2013
28 Aug	1.2 Allopatric vs. sympatric	Foote 2018
2 Sep	DISC: Geography of speciation	Sutra 2019, Dean et al. 2019
4 Sep	1.3 Pre-zygotic isolation	Rundle & Nosil 2005
9 Sep	DISC: Ecological speciation	Villa et al 2019, Hinojosa et al. 2022
11 Sep	1.4 Post-zygotic isolation	Presgraves 2010
16 Sep	DISC: DMI	Wang 2021, Jagannathan&Yamashita '21
18 Sep	1.5 Reinforcement	Servedio 2004
23 Sep	DISC: Reinforcement	Bemmels 2021, Xia et al. 2022
25 Sep	Background primer (mol evol, gene reg, hist demo, model testing AIC)	
30 Sep	Exam 1	
2 Oct	2.1 Genetic basis of speciation I	Campbell et al. 2018
7 Oct	DISC: How many genes?	Hench et al. 2019, Turbek et al. 2021
9 Oct	2.2 Genetic basis of speciation II	Mack & Nachman 2017
14 Oct	DISC: *cis*-regulatory seqs	McGirr & Martin 2021, Diaz 2023
16 Oct	Fall Holiday	
21 Oct	2.3 Genomic architecture	Wolf & Ellegren 2017
23 Oct	DISC: Islands of divergence	Huang et al. 2021, Shi et al. 2023
28 Oct	2.4 Hybridization & spec w/ gene flow	Payseur & Rieseberg 2016
30 Oct	DISC: Introgression	Foote et al 2019, Duranton et al. 2020
4 Nov	2.5 Standing variation vs. *de novo*	Marques et al. 2019
6 Nov	DISC: Ancestral variation	Hejase et al. 2020, Choi et al. 2021
11 Nov	2.6 Microbial species & speciation	Miller et al. 2021
13 Nov	DISC: Bacto/holobiont speciation	Maltsevaetal 2022, Hanson 2023
18 Nov	2.7 Macroevolution	Ricklefs 2007
20 Nov	DISC: Rates of speciation	Rabosky et al. 2018, Beltran et al. 2021
25 Nov	Thanksgiving Day	
2 Dec	2.8 Species delimitation	Rannala & Yang 2020
4 Dec	DISC: Species delimitation	Leache et al 2021, DeRaad 2022
11 Dec	Exam 2 (5:30-7:30 PM)	

Grades will be based on the following: (1000 points total) Final grades will be on the 10-point scale (>90 A, >80 B), with + or - grades awarded to students falling between peaks that emerge in the grade distribution.

Two exams (25% of total) - terminology, names, papers, calculations, short- and long-answer questions. The first exam will be worth 115 points, the second will be worth 135.

Discussion participation (25%) Every student should speak at least once during each discussion. Quality of remarks as much as quantity. You are encouraged to look deeper into issues that arise from the assigned readings. Participation in every discussion is mandatory (not just those you write critiques for)

Written summaries 10 total: 6 long (67 pts each), 4 short (25 pts each) - critical summaries of assigned readings. Submit electronically as Word docs before the start of class.

Format for short summaries:

For each of the two papers, separately:
- Motivation for work (previous work and missing gaps) - 3 sentences max
- Approach and new data - 3 sentences
- What the new data show - 3 sentences
- The bottom line? - 1 sentence, ≤ 15 words

Format for long critiques:

Write 750-800 words (include word count; penalty for over/far-under), comparing and contrasting the assigned papers. Cover the same issues as for the short summaries, but also identify each paper's biggest success and suggest practical ways the work could have been improved (say, with new analyses or methods not available when the paper was written). Use select exemplars rather than being exhaustive. Try not to treat each paper in turn - integrate. If you know of work that bears on the questions raised, you can mention it, but focus on the assigned papers. Aim to be concise, especially in the Introduction. Easy on the adverbs. Double space so I can comment. **Rely on feedback** to shape what you write as the semester progresses (do not turn in before reading comments on the previous). Assignments need to be submitted via TurnItIn off our class Moodle page. Be sure to screen for plagiarism before your final submission.