BIEB 154: Evolutionary Inquiry
Lectures: TTh 2:00-3:20 PM, Sequoyah Hall 147
Discussion sections:
Fri 3 PM (A01): Center Hall 201
Fri 4 PM (A02): Center Hall 201

Professor contact information:
Dr. Sarah Stockwell (sarahs@ucsd.edu)
Pronouns: she/her
Office hours: Wednesdays 2:30-3:30 PM, Muir Biology 1112.

Graduate IA contact information:
Jackie Kinch <jekinch@ucsd.edu>
Office hours: Fridays 1:45-2:45, Art of Espresso coffee cart (by Mandeville).

The best way to contact us is via email. In all emails, please put "Evolutionary Inquiry" in the subject line. I will do my best to answer emails within two business days. The most certain way to get your questions answered is to ask in class or discussion section.

This syllabus is subject to change, particularly because of campus efforts to contain COVID-19. Any schedule changes will be posted on the Canvas site. Make sure to frequently check the Canvas site to keep updated.

Course description:

This is an in-person class. I have mechanisms in place to accommodate students who need to miss individual lectures/assignments for reasons such as temporary illness or required quarantine. However, those mechanisms are emergency measures; they are not intended as a way for you to take all or even a substantial part of the class remotely. If you are unable to attend this class in person most of the time, please drop it. The midterm and final exam are in-person exams.

If you have special circumstances regarding your ability to attend most of the class in person, please email me as soon as possible to discuss your situation: sarahs@ucsd.edu.
If you develop COVID-19 symptoms or test positive for COVID-19 during the quarter, please make your safety and the safety of others your top priority: use the remote alternatives and flexible policies to keep up with the classwork until it is safe for you to return to in-person class. If you have been exposed to COVID-19, please follow UCSD's guidelines.

The course has the following goals:
- To give you a deep understanding of a selection of important questions in evolutionary biology.
- To improve your ability to write accurately and engagingly about science for a general audience. Such writing serves both to clarify your own thinking and to improve your ability to communicate science to others.
- To build your skill at taking in a large amount of information on a given scientific topic, presented from different perspectives, and synthesizing it into a coherent understanding of the topic.
- To improve your ability to read primary literature in the field.

We will spend 1-3 weeks on each of 6 important topics in the field of evolutionary biology. The topics will range across much of modern evolutionary biology, but this class is not intended as a survey. Instead, we will take the time to delve deeply into a small number of topics through reading, writing, and discussion.

This course is different in format from other science classes you have probably taken. There is no textbook and there will be limited lecturing. Instead, we will read and discuss two kinds of literature. For each of the topics, we will read ~100 pages on the topic from books and articles written for a general audience about evolutionary biology to provide background and context. For several of the topics, we will then use this knowledge to help understand a scientific article, written for an audience of scientists, which you will be expected to discuss in detail. By the end of the class, you should have improved your skills at reading scientific literature and deepened your understanding of several major areas of inquiry in evolutionary biology.

There will be a midterm and final exam for the class, covering the content we have read about and discussed in class. See below for more information on the exams.

In addition, you will write a series of short papers (max. 2 pages) for a general audience where you respond to, summarize, or interpret what you have read on the topics. We will do activities in class to help you think critically about the process of writing clearly and engagingly about science, with the goal of improving your science writing over the course of the quarter.

The topics we will investigate this quarter are:
1) How powerful and consistent is natural selection?
2) How repeatable/predictable is evolution?
3) Where do new traits come from?
4) How does human evolutionary history affect us today?
5) How do humans affect the evolution of other species?
6) Race and racism in evolutionary biology

Required materials

- You will need a copy of The Beak of the Finch by Jonathan Weiner. All other readings will be posted as PDFs on the class Canvas site or otherwise made freely available to you.
- You will need an iClicker. A used one is fine. iClickers are available for purchase at the UCSD bookstore or online. You do not need to pay to register it anywhere. You do need to register it (for free) on the class Canvas site. We are not using the iClicker app for cell phones in this course because it depends on reliable wifi in the classrooms, which is not always available.
- Please bring some method of taking notes to class each day (paper/pen, laptop, etc.) You will need to take notes and we will also do in-class activities that require writing or drawing.

Canvas site for the course:

Check the Canvas site often for reading assignments to complete before classes and discussion sections, lecture slides to download after class, etc.

What to find on the Canvas site:

Reading assignments: By the end of each lecture day, I will post the reading assignment for the next lecture or discussion section on Canvas. You should complete this reading assignment and submit your reading journal entry by the start of the next class.

Materials for in-class activities, if needed.

Lecture slides: Research suggests that students learn best if they take independent notes, so I do not post lecture slides in advance. Lecture slides in PDF form will be available on within 24 hours after class.
Podcast: The class will be podcasted. This quarter, the podcast will include the slides and audio but not the board. Note that the podcast isn't a substitute for attending the class in person, especially for this course. Use the podcasts to catch up if you can't come to a class for reasons of illness/emergency, but don't rely on them. It has been my consistent observation that students who attend the class more often get higher grades in the class – not surprising, since we cover a lot of material via interactive discussions and activities during class.

I will post a schedule of class topics and major due dates on Canvas.

Grading:

40 points:	Reading journal (5-7 surprise checks throughout the quarter; total points will be rescaled to a maximum of 40)
100 points:	2-page papers (20 points each)
31 points:	Participation and preparedness. 26 points are for participating in clicker questions during lectures and attending discussion sections. 5 points are for following the participation/preparedness guidelines below.
20 points:	In-class and other miscellaneous written assignments (this is an estimate; points may change somewhat during the quarter)
100 points:	Midterm
100 points:	Final exam (not cumulative)

Total: 391 points

Your final letter grade will be based on your total number of points. If you get over 90% of the points you will receive an A, over 80% you will receive at least a B, etc. If needed to adjust the distribution of letter grades upward, grades will be based on a curve. The curve will only be used (if it is used) to move letter grade thresholds down, so it can only help your grade, not hurt it. For those taking the class pass/no pass (P/NP), the minimum final grade to receive a grade of P is a C-. The final course curve, *if there is one,* will be based on the students that are enrolled in the course at the end of the quarter.

Reading journals:

Reflecting on what you have read is an important part of understanding it and integrating it into your knowledge of biology. To help you with this, you will be expected to maintain a reading journal throughout the quarter. I will give you more information on how to keep your reading journal and how to submit entries for each class day.

Class participation and preparedness for lecture classes and discussion sections:

This part of your grade will be based on the following criteria:

- Arriving to class on time and abiding by UCSD's Principles of Community;
- Coming to class prepared, having read the assignments and thought about them;
- Actively engaging in class discussions and lectures: asking thoughtful questions, giving thoughtful answers and comments;
- Contributing answers/comments in which it is clear you have done the reading;
- Participating fully in class activities (e.g., small-group work) and doing in-class assignments.

Clicker participation/section attendance is worth 1 point per lecture or section and starts counting in week 2. Clicker points will be based on participation, not on correctness.

Remote alternative for participation points: I realize that there may be particular classes that you cannot attend in person because of quarantine, illness, or other emergency. You can make up the participation/preparedness point for a particular class by choosing one of the day's reading selections and writing a half-page, double-spaced response to the question: "How does this reading help answer the big question we're investigating for the current topic?" For example, in the second week of class, we will be studying "How powerful and consistent is natural selection?" so you would discuss how the day's reading selection helps answer that question. Remote alternative participation assignments are graded on thoughtful effort and are due by the start of the next class. If illness/emergency prevents you from doing the remote alternative assignment and you would like to discuss an extension, please email me.

If you miss a class, be sure to also watch the podcast for that class.

Some class sessions have in-class activities that are worth points. If you don't attend that day's class, it is your responsibility to read the day's Canvas page and do the activity on your own if you wish to receive the points. If you need more information on how to do it remotely, please email me. The activities work much better live, because most of them are designed for groups to collaborate on.

Clickers:

This class will introduce you to new material and concepts. To increase the depth of your understanding and to give you practice in applying these concepts, I will provide opportunities for you to reflect on and discuss the ideas in class via clicker questions.

You will need to register your iClicker via the "iClicker Registration" link on the Canvas site. Bring your clicker to each class. You cannot share a clicker with another student enrolled in this class. Answering a clicker question for another student is an academic integrity violation.

It is your responsibility to have your clicker with you at lecture and to make sure it is working properly. If you had technical problems or forgot your clicker and you didn't get clicker points for a particular class, you can do the remote alternative participation assignment to make up the point (due by the start of the next class).

If you lose your clicker mid-quarter and use a different clicker, you need to change your registration in Canvas and you need to email me with this information before the next lecture: your student ID number and your new clicker ID.

In order to give you time to get your clicker registered and iron out any technical problems, clicker points will not start counting toward your grade until the second week of class.

Exams:

The exams are the primary method of assessing how well you have learned the scientific ideas and evidence presented in the readings and in class. In many biology courses, the exams are based primarily on the lectures. **In this class, the exams are primarily based on the readings.** We will mostly use class time to discuss and explore the readings, with occasional intervals of lecture to explain particularly challenging concepts or tie together ideas from multiple readings. The lecture material will be covered on the exams, but to do well on the exams you will need to understand the readings well.

The exams will not test scientific writing per se; that is assessed via the writing assignments. Instead, they will focus on the scientific content we have read about and/or discussed in the class. **I encourage you to take notes during class discussions.**

The exams will be held in person. The midterm will be during class on May 4 and the final will be 3-4:30 PM (not 3-6 PM) on June 13. If you are unable to take exams in person at the scheduled times due to unavoidable circumstances, please email me as soon as possible and we will discuss your options. During the quarter, if you become unable to take an exam at the scheduled time due to serious illness or other emergency, please email me as soon as possible and we will discuss your options.

The exams will be closed-book except that you can refer to paper copies of the *scientific articles* that have been assigned as readings. This does not include most of the readings, which are written for a general audience and which you will be expected to be able to discuss from memory. Do not share information about the exam outside the class.

All regrade requests should be submitted to me in writing (email is fine) within one week of your receiving the graded exam.

Late policy:

Assignments will be marked down 10% for each day (or part of a day) that they are late. An assignment that is turned in on the due date but after the designated time will be considered 1 day late. There is no way to make up a missed reading journal check after the fact.

Prior biology knowledge

Since the prerequisites for the class are BILD 1 and BILD 3, I will assume that you are familiar with the material from those courses. For example, I will assume that you know the essentials of how gene expression is regulated, the rough outlines of evolutionary history of life on earth, and how to interpret a phylogenetic tree. **If you haven't thought about those things since you took biology in high school, you will need to do some extra work for this class.** If you find that there are concepts or terms in the reading or lecture that you don't know the background for, do the background reading on your own to bring yourself up to speed. We are also happy to help you in office hours.

Writing and Critical Expression Hub

We will be doing a lot of writing in this class. I strongly recommend the Writing Hub as a free and convenient resource to help you improve your writing. Information about the Writing Hub:

> **The Writing Hub --** Need help with a writing project? Want to talk through your ideas or get a second opinion on whether your writing is clear, logical, and well-supported? **The Writing + Critical Expression Hub ("Writing Hub") can help!**
>
> The Writing Hub offers UC San Diego students free one-on-one help with any writing project—from cover letters to lab reports, research papers to grant proposals. Visit the Writing Hub to meet with a supportive, well-trained peer writing mentor who will help you gain perspective on what works and what can be improved in your writing.
>
> **The Writing + Critical Expression Hub | writinghub.ucsd.edu | writinghub@ucsd.edu**
> **What?** Free help for all UCSD writers—any writing project, every stage of the process
> **How?** Book appointments at https://ucsd.mywconline.com. Same-day appointments also available.

You don't have to bring a finished draft; for example, you can bring your notes and ideas and get help with organizing your paper. To encourage you to go, **I will offer 3 extra credit points** to each

student who goes to an appointment with one of the peer writing mentors to work on writing for this class **by the due date for the first 2-page paper.**

Students with special circumstances

UC San Diego (as an institution) and I (as a human and as the instructor of this course) are committed to full inclusion in education for all persons. Services and reasonable accommodations are available to students with temporary and permanent disabilities, to students with DACA or undocumented status, to students facing mental health issues or other personal situations, and to students with other kinds of learning needs. Please feel free to let me know if there are circumstances affecting your ability to participate in class. Some resources that might be of use include:

- Office for Student with Disability, https://students.ucsd.edu/well-being/disability-services/index.html
- UC San Diego CAPS (Counseling & Psychological Services), https://wellness.ucsd.edu/CAPS/Pages/default.aspx
- UC San Diego Undocumented Student Services, https://uss.ucsd.edu/ Note: a list of campus resources can be found here: https://students.ucsd.edu/sponsor/undoc/resources/index.html
- Learning Strategies Center, https://commons.ucsd.edu/academic-support/learning-strategies/index.html
- The UCSD Basic Needs HUB is part of a UCSD network to address basic needs insecurity, including housing and food. It contains the Triton food pantry and other organizations. Students can obtain personal care products from the HUB for free, including shampoo, menstrual products, toothpaste, and even diapers for students with young dependents. 39% of UCSD students reported having trouble obtaining food: you are not alone, so I encourage you to take advantage of the support that's available. https://basicneeds.ucsd.edu/

I would be glad to help you identify other resources if needed.

Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. OSD Academic Liaisons also need to receive current AFAs. For more information, contact the OSD at (858) 534.4382 (V); (858) 534-9709 (TTY); osd@ucsd.edu, or http://osd.ucsd.edu. **You will need to coordinate scheduling of exams with me. All of these arrangements should be made within the first two weeks of the quarter.**

The Academic Achievement Hub (https://aah.ucsd.edu/) has many resources to help you succeed, including Learning Strategies tutoring: https://aah.ucsd.edu/learning-strategies/index.html

For transfer students: The Triton Transfer Hub offers services to transfer students including study spaces, peer coaches, learning strategists, free printing, and community building opportunities. https://transferstudents.ucsd.edu/transfer-hub/index.html

If you are having academic difficulty, OASIS (http://oasis.ucsd.edu) can often help. They provide tutoring, as well as classes in study skills and time management.

This is a stressful time. If you are having personal difficulties, do not hesitate to seek help at Counseling and Psychological Services (CAPS):

(https://wellness.ucsd.edu/CAPS/Pages/default.aspx), which is free to students. They can help you get over many types of hurdles.

Problems? If you have serious medical or personal problems during the quarter, the university allows medical withdrawals. Contact the Biology Student Affairs Advising Services office at 858-534-0557 or go to their website.

Educational research and Evolutionary Inquiry

I and my colleagues do research on how students learn biology. One way that we measure whether a particular approach was effective is to look at your work in this class. However, it is your choice whether you consent to my using your work in our research. If you do participate in the research study, that would mean that your work in this class would be added to a set of data that we can analyze after the class ends. Your name and other personally identifiable information would be removed from the work before we analyze it. Your work would be anonymous for the data analysis. Also, we do the data analysis after the class ends and all grades have been turned in. As a result, none of this analysis could affect your grade in any way.

I will provide a consent form for you to read before we begin any curriculum that would be included in a study. You will have the opportunity to opt out of the study. There are no penalties for opting out of the study, and it will not affect your grade in any way. The opt-out information is sent to a third party who keeps it safe until after classes end and I have submitted the grades, and then the third party will de-identify the data and remove anyone's work who has opted out.

If you have questions or concerns, please email me: sarahs@ucsd.edu.

Generative AI (e.g., ChatGPT) policy:

All the writing that you turn in in this class, including reading journals and papers, must be in your own words, based on your own understanding. Using generative AI technology such as ChatGPT for your writing assignments in this course will be considered cheating and will be dealt with as an academic integrity violation.

Explanation of the policy:
The point of the writing assignments is to give you practice with the important skill of scientific writing: communicating scientific ideas. The scientific writing process involves several skills which this course gives you a relatively rare opportunity to practice and get feedback on:

- Reading and learning about scientific ideas and information (not from a textbook).
- Organizing what you learned into a framework in your own mind so that it makes sense to you and integrates into your pre-existing knowledge and understanding of the topic.
- Selecting, out of what you know, the particular themes that you wish to communicate to your reader and deciding which elements of what you have learned will support those themes.
- Creating a well-organized flow of ideas that present the theme or scientific claim and the supporting ideas or evidence for it.
- Writing the sentences and choosing the words that will present your ideas to the reader in an engaging and accurate way.

Notice that most of these are not "words on paper" skills, but thinking skills. The writing is the product, but the main point is the process, because that is where the learning happens. If you have someone or something do any of that thinking or writing work for you, you are missing the opportunity to practice those very valuable (and career-relevant!) skills -- an opportunity that you or

someone who cares about you is paying a lot of money for. You are also being dishonest, by turning in writing that you claim to be your own but which is not. That is why I will treat writing that was done entirely or partially by an AI (or another human) as an academic integrity violation.

University Policy on Integrity of Scholarship

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying, cheating or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result in sanctions. Sanctions can include an F in this class and suspension or dismissal from the University. So, think carefully before you act by asking yourself: a) is what I'm about to do or submit for credit an honest, fair, respectful, responsible & trustworthy representation of my knowledge and abilities at this time and, b) would my instructor approve of my action? You are ultimately the only person responsible for your behavior. So, if you are unsure, don't ask a friend — ask your instructor, instructional assistant, or the Academic Integrity Office. You can learn more about academic integrity at academicintegrity.ucsd.edu. (Source: Academic Integrity Office, 2018)

Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Academic misconduct is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade. Academic misconduct misrepresents your knowledge and abilities, which undermines the instructor's ability to determine how well you're doing in the course. Please do not risk your future by cheating.

Students suspected of academic integrity violations on exams will be invited to Zoom follow-up meetings where they will be asked to (in real time, on video) justify their answers. If the instructor isn't convinced during the meeting, or if the student refuses to participate, the violations will be reported to the Academic Integrity Office.

To uphold academic integrity, students shall:
—Complete and submit academic work that is their own and that is an honest and fair representation of their knowledge and abilities at the time of submission.
—Know and follow the standards of the class and the institution.

Thus, no student shall engage in an activity that undermines academic integrity or facilitates academic integrity violations by others. This includes, but is not limited to, the following behaviors:

- No student shall procure, provide, or accept any material that contains questions or answers to any examination or assignment unless the student's possession of the material has been authorized by the instructor.
- No student shall complete, in part or in total, any academic work (e.g., examination, assignment, paper) or obtain academic credit (e.g., attendance, participation) for another person.
- No student shall allow any academic work or academic credit to be completed or obtained, in part or in whole, for themselves by another person.
- No student shall plagiarize or copy the work of others and submit it as their own work.
- No student shall employ aids in undertaking course work or in completing any exam or assignment that are not authorized by the instructor.

- No student shall alter graded class assignments or examinations and then resubmit them for regrading without the instructor's permission.
- No student shall submit substantially the same material more than once without prior authorization from the instructor, such as a paper that was written and submitted in another class.

(Source: UCSD Policy on Integrity of Scholarship, http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2).

If you do not understand these expectations and authorizations, please speak with the Instructor as soon as possible. Please read the official UCSD policy at https://academicintegrity.ucsd.edu/process/policy.html

Policy on posting or selling course materials

Please do NOT post my lectures or class materials on public websites like Course Hero, Chegg, Quizlet, etc. I work hard on my class materials and do not want the material made public for anyone to see or download.

Enrollment questions: Administrative, advising, or registration questions should be submitted via the Virtual Advising Center (vac.ucsd.edu).