

Instructor: Dr. Lisa McDonnell (she/her/hers) lmcdonnell@ucsd.edu

A note about emails: I will do my best to respond within 24 hours Mon-Fri. However, if your email is regarding information that can be found on the course site or was covered in class or lab I may not reply. This is not because I do not want to help, but because it is important to be resourceful about finding available information.

I will only send and receive correspondence via lmcdonnell@ucsd.edu or TritonEd.

Office: York Hall 3080D, office phone: 858-246-0890

Office Hours: TBD.

Lecture: Tuesdays/Thursdays 11am -12:20pm, SOLIS 107

Final Exam: March 21, 11:30am-2:29pm

Discussion sections: various times, check your registered section time and location.

Instructional assistant: Anqi Yang any010@ucsd.edu

Materials:

- iClicker is required for lectures and should be [registered on TritonEd](#).
- **Optional** textbook: Essentials of Genetics, Klug 9th edition, is an available textbook in the bookstore, but it is **not required**. I will provide readings that are sourced from free, online material. If you are comfortable with online resources, you can use the ones I recommend throughout the quarter (and/or others you find). If you want a textbook then Klug is recommended, and you can find the relevant topics using the index/table of contents. You may also use older editions of the Klug textbook. We are **not** using mastering genetics.

Course website: <https://ted.ucsd.edu>

Course Schedule: Please check TritonEd site.

Welcome to BICD 100: Genetics! This course aims to develop concepts of genetics as they apply to how information is stored, utilized, and inherited in life. Fundamental concepts include gene and chromosome structure, phenotype, chromosome segregation and recombination, gene expression, random mutation, and natural selection. We will learn these concepts by studying their roles in biological systems and will apply our understanding of these concepts to explain and predict a wide range of biological and real-life phenomena including human health, biodiversity, and agriculture.

LEARNING GOALS

- **Collaborate** with fellow students and the teaching team to learn concepts in genetics
- **Apply knowledge** of genetics concepts to analyze & explain data, make predictions, and solve problems
 - Analyze data from primary literature to draw conclusions and **construct scientific arguments** based on evidence and reasoning

ACCESSIBILITY

<http://disabilities.ucsd.edu> | osd@ucsd.edu | 858-534-4382

Any student with a disability is welcome to contact us early in the quarter to work out reasonable accommodations to support their success in this course. Students requesting accommodations for this

course due to a disability must provide a [current](#) Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). Students are required to present their AFA letters to faculty and to the OSD Liaison in the Division of Biological Sciences [in advance](#) so that accommodations may be arranged. Whenever possible, we will use universal designs that are inclusive. If you have feedback on how to make the class more accessible, please get in touch!

INCLUSION

It is my goal to create a learning environment that supports diversity of thought, perspective, experience, and identities. I encourage all of you to participate in discussion and contribute to the field from your perspective. If you have feedback on how to make the class more inclusive, please get in touch!

Office of Equity, Diversity, and Inclusion:

858.822.3542 | diversity@ucsd.edu | <https://diversity.ucsd.edu/>

<https://students.ucsd.edu/student-life/diversity/index.html>

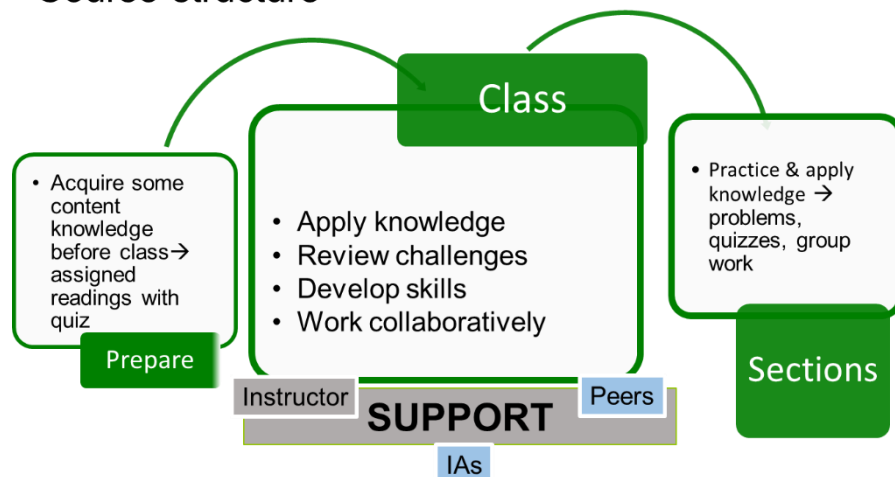
<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

LEARNING IN THIS COURSE

This course is designed to be a **collaborative** environment for everyone to learn together and construct a shared understanding of the material. **Active participation** both in class and in lab is expected. Being able to **communicate** understanding, and confusion, is critical to success in any discipline, and is very useful for learning¹. To encourage collaboration, class activities and discussions will be done in groups, and grades will not be assigned on a curve.

We will use class time to work on applying our knowledge, troubleshooting difficult topics, and practice solving problems. There are often pre-class assignments to prepare for the material to come in class.

Course structure



Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Therefore, quizzes will include questions that are based on solving problems in new contexts.

¹ Smith et al., 2009. <http://www.sciencemag.org/content/323/5910/122.short>

GRADING

BICD 100 has multiple grading components:

- participation 10%
- weekly in-class quizzes 25%
- final exam 35% or 39% (see *below)
- writing assignments 25% or 29% (see *below)
- professionalism 1%
- Bonus opportunity 0.5%

*Because different people may excel in different aspects, the writing assignments or final exam, whichever is higher for each individual, will be scaled to either 39% (final) or 29% (writing), bringing the total to 100%.

The following grading scheme will be used. The course is **not** graded on a curve (i.e. 20% of students getting A, B, C, and such). Thus, the ability to do well in this course is not dependent on others doing poorly. Because course assessments are not perfectly precise, grade cutoffs may be shifted slightly (e.g. by ~1%) from those listed below, based on large gaps in between individual scores.

A+	97-100%	B+	87-90%	C+	77-80%	D+	67-70%	F	0-60%
A	93-97%	B	83-87%	C	73-77%	D	63-67%		
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%		

There are no opportunities for extra credit beyond what is assigned as part of the course by the instructor.

Participation: Active participation both in lectures and discussion sections is important for achieving the course goals. There will be many participation items, including pre-class reading assignments, in-class participation (iClickers, discussions and activities), discussion section problem sets and group work. Because individual students may have different competing schedules and life events, completing 85% or more of all participation items will earn the full participation. For example, if there are 40 participation items, completing 34 items will result in 40/40, whereas completing 31 items will result in 31/34 for the participation grade.

Pre-class assignments

Before most classes there will be an assigned reading and associated quiz, posted on TritonEd, to be completed before class. Reading will be assigned from online sources and primary literature. Check the weekly content folders on the TritonEd site for reading and quiz details and due dates. Pre-class reading assignments and quizzes are designed to 1) introduce some relevant background material, so you are prepared for class and can have productive discussions; 2) introduce some relevant primary literature; 3) your quiz responses help the instructor know what material students are struggling with.

In-class discussions: these will happen on a regular basis, and include iClicker questions and the occasional group-work activity. Please note that it is a violation of academic integrity policies to use someone else's iClicker in class. If you forget your iClicker you cannot make up the points (remember the 85% rule).

Discussion sections:

Sections will begin during Week 1 (Monday Sept 30). Weekly discussion sections are designed to engage in collaborative problem solving, practice data analysis, and forming scientific arguments – all required for our in-class quizzes and final exams. For most sections there will be a problem set assigned to complete

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before section starts. It is very important that you genuinely attempt the exercises before section so you can meaningfully contribute in section. Check TritonEd for section exercises. The section problems will cover the material from the week *prior*. For example, the Week 2 section will be mostly about material from Week 1 and prior. Section exercises will be graded for thoughtful completion on a 0, 0.5, 1 scale, and part of your score will depend on participation in section.

You should already be enrolled in a section, and *you must attend the section which you are enrolled in to receive credit*. I am not able to change the number of students in a section, if a section is full you must choose another one.

A note about the role of the IA in discussion sections: the best way for you to learn how to solve problems and correct misconceptions is to work through the problem, and discuss the problem with your peers and the IA. The IA is not going to re-lecture material or simply give you the answers, rather they will use the time to facilitate discussions and collaborative problem solving.

Writing Assignments

There will be three writing assignments focused on reading, understanding, and analyzing research data from primary literature articles (each worth 8.33%). The writing assignments will ask you to summarize your analysis and understanding in the form of a scientific argument (claim, evidence, explanation) – we will review this structure in class. There will be three parts to each assignment: 1) first draft, 2) peer-review, 3) final version.

The writing assignments will complement activities in class and in discussion section. The skills developed in these writing assignments will also be tested on quizzes and the final exams, where you will be challenged to analyze data and construct scientific arguments that answer specific research questions. Details of these assignments will be made available in class and on TritonEd.

The Writing and Critical Expression Hub at the Teaching + Learning Commons located in Geisel Library (<http://commons.ucsd.edu/students/writing/index.html>) provides support for undergraduates working on course papers, e.g. writing assignments in this course, as well as other independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing. The Writing and Critical Expression Hub offers: one-on-one writing tutoring by appointment; supportive and in-depth conversations about writing, the writing process, and writing skills; help with every stage in the writing process, walk-in tutoring; and workshops on writing.

Weekly In-Class Quizzes & Final Exam: Tests in this course will focus on application of knowledge to assess and solve novel problems (**not** memorization of facts), and forming scientific arguments. Hence, tests will be open notes (e.g. paper notes, books, and calculators, but not electronic equipment that can be used to communicate with others). Weekly in-class quizzes will largely focus on concepts from the previous week. There will be 8 in-class quizzes. The best 7 scores will be counted towards your course grade: the very highest score will be weighted to be worth 5%, and the remaining top 6 scores will be worth 20% (each equally weighted, so about 3.33% each). These quizzes will be short, taking about 15 minutes individually to complete. They will take place at the **start of class on Thursdays beginning Week 2**.

To facilitate reflection and learning from quizzes they will be completed in two phases: The first phase will be done individually, and the second phase will be the same quiz done again in groups. The individual score will count for 75% and the group will count for 25%, if the group score is higher than the average of the individuals within a given group.

Example 1:	Example 2:
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<p>Individual #1 gets 8/10 Individual #2 gets 7/10 Individual #3 gets 9/10 Individual #4 gets 10/10 Average of individuals = 8.5/10 Group score 9/10</p> <p>Final quiz score for each individual = (Individual Score * 0.75) + (0.25 * 9) = score out of 10 e.g. for individual #1 = (8x0.75) + 2.25 = 8.25/10</p>	<p>Individual #1 gets 8/10 Individual #2 gets 7/10 Individual #3 gets 9/10 Individual #4 gets 10/10 Average of individuals = 8.5/10 Group score 8/10</p> <p>Final quiz score for each individual = individual score</p>
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It is important to practice effective group work and communication in order to achieve the maximum possible as a group, and thus as an individual.

Another major benefit of this approach is immediate feedback after taking the quiz, which is helpful for developing a stronger understanding of the concepts (which will all be needed on the final exam).

The final exam *will not* have a group component.

The final exam will include material from throughout the course, and is worth 35%.

Professionalism: This portion of the course grade is intended to motivate students to consider the impact of their actions on their own learning and the learning of others in the course. Unprofessional interactions consume time yet have no meaningful benefits to you, your fellow students, and/or the teaching team. Analogously in the workplace, being unprofessional to your colleagues or supervisors will only discount you. When you are discounted, you will not be invited for new opportunities that you may or may not be aware of.

Professionalism can be demonstrated through individual (1% described here) and community efforts (0.5% extra credit described below). The individual component is to account for demonstrating maturity and professionalism. By default, every student is assumed to be professionally mature. Hence, this component is awarded to every student at the beginning of the quarter. During the quarter, based on observations by the teaching team, which includes but is not limited to one-on-one interactions, electronic communication, and follow-up conversations on grades, your professionalism credit may be deducted in steps of 0.5%.

Example interactions with meaningful benefits:

- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Clarifying course material that facilitates deeper learning
- Reporting errors or problems in class, on assignments, or for other course material

Example interactions that have no meaningful benefits and thus should be avoided:

- Contributing inequitably to team work in class, in discussion section, or on exams
- Harassing and/or bullying the instructional team or other students, either in person or online
- Asking questions when the information is already available
- Ignoring the directions or requests from the instructional team
- Being disruptive to fellow students in class, in discussion section, or on exams

Extra Credit: The 0.5% extra credit can be earned by completing course evaluations and related surveys which aim to improve the course and the educational experiences of your future peers. There are no other opportunities for extra credit beyond what is assigned by the course instructor.

STUDY TIPS

Assessments in this course are focused on applying understanding of genetics concepts to solve problems and propose reasonable explanations. You will also be asked to analyze data to draw conclusions. You will not be tested on your ability to memorize facts. So, to prepare for quizzes and the final exam it is best to practice applying knowledge, solving novel problems, and analyzing data to draw conclusions.

Suggestions on reviewing class materials:

- Check the learning objectives included in lecture slides – are there any you feel you can't do proficiently
- Re-do clicker questions, but cover-up the answer and explain the reasons for your choice in writing. Read your answer out-oud, does it make sense?

Suggestions for using practice problems:

- Sit down with practice problems, without your notes, and time yourself. Pretend they are a test – do not consult notes, do not check the answers when you feel stuck. Try your best, and only after you have completed them should you check the answers. Then, for questions where your answer deviates from the answers. Ask:
 - o Is my answer completely incorrect? Where did I go wrong?
 - o Is my answer partially correct? What was I missing, and why?
 - o Ask for help – come to office hours! Work with your peers!

LATE ASSIGNMENTS AND MISSED QUIZZES

Assignments must be submitted on time to be eligible for full credit. Except in the case of documented medical or family emergencies, late assignments will be subjected to a 25% deduction per day if submitted within 48 hours after the posted due date. Assignments not submitted within 48 hours of the due date will receive a score of 0. There are no make-up quizzes offered, except in the case of a documented medical or family emergency (in which case the instructor will decided how to go about the make-up testing, which may include making the final exam worth more). No late participation items will be accepted (see the 85% rule).

ACADEMIC INTEGRITY

<https://students.ucsd.edu/academics/academic-integrity/index.html>

Integrity of scholarship is essential for an academic community. The University expects that both students and faculty will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual(s) to whom it is assigned, without unauthorized aid of any kind. In this course, we need to establish a set of shared values. Following are values* adopted from the [International Center for Academic Integrity](#), which serve as the foundation for academic integrity.

	As students we will.....	As the teaching team we will.....
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Honesty	<ul style="list-style-type: none"> Honestly demonstrate your knowledge and abilities according to expectations listed in the syllabus or in relation to specific assignments and exams Communicate openly without using deception, including citing appropriate sources 	<ul style="list-style-type: none"> Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams Communicate openly and honestly about the expectations and standards of the course through the syllabus and in relation to assignments and exams
Responsibility	<ul style="list-style-type: none"> Complete assignments on time and in full preparation for class Show up to class on time and be mentally and physically present Participate fully and contribute to team learning and activities 	<ul style="list-style-type: none"> Give you timely feedback on your assignments and exams Show up to class on time and be mentally and physically present Create relevant assessments and class activities
Respect	<ul style="list-style-type: none"> Speak openly with one another while respecting diverse viewpoints and perspectives Provide sufficient space for others to voice their ideas 	<ul style="list-style-type: none"> Respect your perspectives even while we challenge you to think more deeply and critically Help facilitate respectful exchange of ideas
Fairness	<ul style="list-style-type: none"> Contribute fully and equally to collaborative work, so that we are not freeloading off of others on our teams Not seek unfair advantage over fellow students in the course 	<ul style="list-style-type: none"> Create fair assignments and exams and grade them in a fair and timely manner Treat all students and collaborative teams equally
Trustworthiness	<ul style="list-style-type: none"> Not engage in personal affairs while on class time Be open and transparent about what we are doing in class Not distribute course materials to others in an unauthorized fashion 	<ul style="list-style-type: none"> Be available to all students when we say we will be Follow through on our promises Not modify the expectations or standards without communicating with everyone in the course
Courage	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept the consequences of upholding and protecting the above values 	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept the consequences of upholding and protecting the above values

** This class statement of values is adapted with permission from Tricia Bertram Gallant Ph.D.*

All course materials are the property of the instructor, the course, and the University of California, San Diego and **may not** be posted online, submitted to private or public repositories, or distributed to unauthorized people outside of the course. Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review and possibly given a score of 0.

LECTURE PODCAST

<http://podcast.ucsd.edu/>

Whenever possible, lectures will be recorded and available online as videos as a resource for review. However, attendance and participation are highly encouraged, as substantial portions of lectures will be interactive. Please see participation in the grading section for more details.

REGRADES

If a grading error has been made, you should submit a re-grade request to Dr. McDonnell at the end of a lecture within one week of the return of the exam. Attach a cover-sheet to your regrade request, indicating the specific details of the request. If you think your answer deserves more points (e.g. it is not an arithmetic error), your cover-sheet should contain a concise description of how your answer compares to the key, and why you think it should have received more points. Regrades will not be done if these instructions are not followed. No regrades are possible for exams written in pencil or non-permanent ink. Students who submit exams for re-grading understand that we may (1) regrade the entire exam, and (2) compare the submitted paper to a scanned copy of the original exam.

TECHNOLOGY POLICY:

Laptop computer policy: Students are welcome to bring laptops to lecture for note-taking purposes. Please see this research study that shows “multi-tasking” on computers is likely to decrease your grade, but it also decreases the grades of people around you who can see your screen⁴! For this reason, we ask that you do not flip between lectures notes and the internet. The use of cell phones, computers, or any other electronic devices is not permitted during quizzes. Use of a cell phone or other similar electronic devices during an exam or quiz is grounds for receiving a failing grade.

4 Sana et al. 2013. <http://www.sciencedirect.com/science/article/pii/S0360131512002254>

BASIC NEEDS

Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:

foodpantry@ucsd.edu | basicneeds@ucsd.edu | (858)246-2632

TECHNICAL SUPPORT

For help with accounts, network, and technical issues: <https://acms.ucsd.edu/contact/index.html>

For help connecting to electronic library resources such as eReserves and e-journals:

<https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/>

DISCRIMINATION AND HARASSMENT

The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, <https://ophd.ucsd.edu/>, or <http://ophd.ucsd.edu/report-bias/index.html>

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

CARE at the Sexual Assault Resource Center: 858.534.5793 | sarc@ucsd.edu | <https://care.ucsd.edu>
Counseling and Psychological Services (CAPS): 858.534.3755 | <https://caps.ucsd.edu>

LETTERS OF RECOMMENDATION

If you think you may want me to write you a letter of recommendation (or any other instructor), please consider what a good letter would contain and how your actions in the course demonstrate the qualities you will want highlighted in a good letter. When students ask me for a letter of recommendation, I ask them to write to me about how they demonstrated critical thinking, leadership, collaboration, and professionalism. I will be specifically looking for examples of these qualities *that I could observe* in class, lab, and office hours. Be sure to actively participate in the in-class discussions, talk to me during my office hours: ask questions, offer your own ideas and interpretations of your results, bring interesting facts/papers that are connected to the material we are studying. If you don't actively show the qualities that are needed to write a good letter, it will be hard for me to write a letter that is meaningful and useful.

SUBJECT TO CHANGE POLICY

The information contained in the course syllabus, other than the grade and absence policies, may be – under certain circumstances (e.g. to enhance student learning) – subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Consent to Participate in Educational Research

University of California, San Diego

Consent to Act as a Research Subject

Investigating the Impact of Pedagogical Choices on University Student Learning and Engagement

Who is conducting the study, why you have been asked to participate, how you were selected, and what is the approximate number of participants in the study?

Gabriele Wienhausen, Director of the Teaching and Learning Commons, together with her education research colleagues is conducting a research study to find out more about how pedagogical choices affect student learning and experience in the classroom. You have been asked to participate in this study because you are a student in a class that is being studied or used as a control. There will be approximately 500,000 participants in this study.

Why is this study being done?

The purpose of this study is to create knowledge that has the potential to improve the learning and educational experience of students at UC San Diego and beyond.

What will happen to you in this study and which procedures are standard of care and which are experimental?

If you agree to be in this study, the following will happen:

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- Your data from this class including grades, homework and exam submissions, and survey responses will be included in the analysis to determine the effectiveness of the pedagogical techniques used in this course compared to other similar courses.

How much time will each study procedure take, what is your total time commitment, and how long will the study last?

Your participation involves only agreeing to let us use your data in our analysis. It will require no time on your part above the time you put into this course without agreeing to the study.

What risks are associated with this study?

Participation in this study may involve some added risks or discomforts. These include the following:

1. A potential for the loss of confidentiality. We will not share your personally identifying data with people outside our research team. Data will only be kept in anonymized form for research purposes. Course data will not be used for this research study until after final grades have been posted and will be rendered confidential by removing any identifiers before analysis. Your instructor will not know whether or not you are participating in this study until after final grades have been posted. Data from students who opt out of the study will be removed prior to data analysis. Research records will be kept confidential to the extent allowed by law. Research records may be reviewed by the UCSD Institutional Review Board.

Since this is an investigational study, there may be some unknown risks that are currently unforeseeable. You will be informed of any significant new findings.

What are the alternatives to participating in this study?

The alternatives to participation in this study are not to participate. If you choose to opt-out of participating in this research study, we will exclude your data from analysis. Whether you participate will have no impact on your experience or grade in the associated class as the professor will not know who is or is not participating in the study until after final grades are assigned.

What benefits can be reasonably expected?

There is no direct benefit to you for participating in the study. The investigator, however, may learn more about how to improve student learning, and society may benefit from this knowledge.

Can you choose to not participate or withdraw from the study without penalty or loss of benefits?

Participation in research is entirely voluntary. You may refuse to participate or withdraw or refuse to answer specific questions in an interview or on a questionnaire at any time without penalty or loss of benefits to which you are entitled. If you decide that you no longer wish to continue in this study before the end of the quarter, simply respond to the online opt-out form here:

<https://goo.gl/forms/JSBRjEmkES6W6xYc2>. If you decide to opt out after the quarter has ended, you must contact Ying Xiong (yix184@ucsd.edu) and give the quarter and the course from which you would like your data withdrawn.

You will be told if any important new information is found during the course of this study that may affect your wanting to continue.

Can you be withdrawn from the study without your consent?

The PI may remove you from the study without your consent if the PI feels it is in your best interest or the best interest of the study. You may also be withdrawn from the study if you do not follow the instructions given you by the study personnel.

Will you be compensated for participating in this study?

You will not be compensated for participating in this study.

Are there any costs associated with participating in this study?

There will be no cost to you for participating in this study.

Who can you call if you have questions?

Gabriele Wienhausen and/or her colleague has explained this study to you and answered your questions. If you have other questions or research-related problems, you may reach Gabriele Wienhausen at gwienhausen@ucsd.edu or (858) 534-3958.

You may call the Human Research Protections Program Office at 858-246-HRPP (858-246-4777) to inquire about your rights as a research subject or to report research-related problems.

Your Consent

If you consent to participate in this study and are at least 18 years old, no action is needed. If you DO NOT consent to participate in this study, or you choose to opt-out at any time during the quarter, please submit this form online at <https://goo.gl/forms/JSBRjEmkES6W6xYc2>. Your instructor will not have access to the list of students who opted out until after grades are posted. Note that you must separately opt-out of the study for each course involved in this study.

BICD 100 FALL 2019

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CALENDAR

See TritonEd online syllabus for the calendar.