

Cell Biology, Biol 360, University of Victoria Summer 2024

Welcome!

We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the University of Victoria stands, and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

I am very happy to live on this beautiful land, home to humans for thousands of years. Let's be thankful to learn together on this land, and strive to make the world a better place.

We welcome everyone to learn in this course and we respect every human being, including all people from all ethnic backgrounds, religious beliefs, sexual orientations, genders, socioeconomic backgrounds and abilities.

We want to welcome parents, and we invite their children to lectures if missing lecture would be the alternative.

Your instructor

Instructor: Dr. Barbara Ehltig (Course coordinator, lecturer)

email: behltig@uvic.ca

How to connect with me?

- You can always connect with me via email. My goal is to respond within one business day (Monday – Friday).
- Want to meet in person? Just send me an email and we arrange a meeting time (preferred times: right after class). Office hours are for you to connect with us, discuss lecture material, and for us to get to know each other.
- Want to know about my background? You can find out more on the Brightspace 'Meet your instructor' site!

Intended Learning Outcomes for BIOL360 Cell Biology:

At the end of this course, you will ...

- be familiar with and understand the theory of **major isolation and visualization techniques**, such as isolation of cells and organelles, cultivation of cells, and microscopy of cells.

→Your knowledge about techniques will enable you to know when to apply which technique for specialized research questions.

- be familiar with **cellular processes that are most studied and best understood** including membrane composition and transport across membranes, intracellular protein localization, cell signaling, cytoskeleton assembly and disassembly, cell cycle regulation, apoptosis and cancer.

→ Your knowledge about pathways will enable you to find out how potential mutations might affect pathways and how pathways interact, for example the impact of mutated cell cycle genes in cancer and the impact of the cytoskeleton on cell division.

- **read and interpret figures** from recently published peer reviewed scientific papers

- **collaborate with your peers** in pair discussions, and a group paper project

→ You will learn to draw conclusions from graphs by using your knowledge and discuss with your peers.

- actively engage with class material by **teaching your peers** key concepts in short presentations.

→ Your overall knowledge about most common molecular techniques and cellular pathways will enhance your scientific thinking.

→ The active learning components in this class hopefully increase your joy for science and overall understanding of scientific concepts.

- perform to perfection **major life skills** such as meeting deadlines, punctuality, time management, collegiality, open discussion with peers and instructor, being proactive aiming for problem solving rather than complaining.

Designated Class time and location:

Tuesday, Wednesday and Friday at 12.30 pm -2.20 pm in Cor B135. Classes start Tuesday May 14th and end Friday June 28th.

Class time is our time together and critical for your active learning journey. I designed this course as an active learning experience with student engagement in form of student presentation, group work and active discussion. It is important that each one of us takes an active part in this class by active listening and asking questions.

Prerequisites:

Biol230 OR BME200 and BME201, AND one of Bioc 299, Bioc300A, Bioc300B (Bioc300A or 300B can be taken as corequisites). Please be aware that if you drop a co-req the system will automatically drop you from this course as well! Students who are missing one pre/co-requisite might be allowed to register with special permission, however it is the students' responsibility to catch up with any missing background knowledge.

Tentative Class Schedule

- Welcoming, rules and guidelines
- Introduction to Cell Biology (parts of chapters 1,3, 4, 12, 14)
- Working with cells: visualizing cells and manipulation of cells (chapters 8, 9)
- Membranes (chapter 10)

- Membrane transport of small molecules & the electrical properties of membranes (chapter 11)
- Intracellular Compartments and Protein sorting (chapter 12)
- Intracellular vesicular Traffic (chapter 13)
- Cell communication and signaling pathways in cells (chapter 15)
- Cytoskeleton (chapter 16)
- Cell cycle (chapter 17)
- Apoptosis (chapter 18)
- Cancer (chapter 20)
- Wrap up and catch up, Review, evaluation...

Textbook (optional):

Molecular Biology of the Cell, 7th edition (! New edition), Alberts B, Johnson, A, Lewis J, Morgan, Raff M, Roberts K, Walter P, Garland Science, ISBN 978-0-393-88482-1

The book is available to you in various forms:

- the textbook can be purchased at the bookstore:
9780393884821 Hardcover \$217.50,
9780393884845 \$174.50 Loose leaf,
9780393427080 360 day licence \$110.50 E-TEXT
- Etext also available via VitalSource.com and at Norton
<https://digital.wwnorton.com/mboc7>
- The UVIC library has the book on reserve.
- Figures from selected chapters are posted on Brightspace

We are using the new edition of the textbook. If you get your hands on a used textbook of the 6th edition, you may use it, but it is your responsibility to find the appropriate readings.

For the in-class presentation (see below) please **ONLY** use the latest 7th edition!

Lecture notes will be posted on Brightspace (content-> weeks). I recommend that you bring the lecture notes to classes to add comments on slides and answer questions.

Provided lecture slides are for personal use ONLY and are not allowed to be distributed without permission from the publisher. The material is protected under copyright law, even if not marked with a ©. Any further use or distribution of materials to others requires the written permission of the instructor.

Lectures (and student presentations) may be recorded with Echo360 (video files) and/or voice (audio files) and posted on Brightspace after each lecture.

Evaluation:

- **Weekly quizzes 40%** every **Tuesday** (May 21, 28, June 4, 11, 18, 25th) at **12.30 pm - 12.50 pm** invigilated **in class** on Brightspace. I invite you to write in the classroom or at CAL (with an earlier start time so that you are back in class for learning at 12.50 pm). I will start teaching at 12.50 pm.

Each quiz is worth 8%. Only the **five best** quizzes (total of 40%) will be used for your final grade (you have ONE free-bee). You must write at least FOUR quizzes to successfully complete this class. If you miss more than TWO quizzes either alternative forms of evaluation might be necessary OR the final exam might be worth more. There is no deferred option for weekly quizzes.

- **Final exam: 40%**, on last day of class on Brightspace, Friday **June 28th**, at 12.30 pm – 2.20 pm, cumulative. You must write the final exam to complete this course.

It is your responsibility to log on to complete and submit the quiz/final exam on your own electronic device. If you have no electronic device, please contact me ASAP.

The weekly quizzes and the final exam are **invigilated**. If you are unable to attend the quiz/final in person, please contact BE immediately to discuss options.

Please note: for all six quizzes and the final exam you are allowed to bring a paper preferably hand written (no digital version) **ONE page study-sheet**.

- **Student presentation: 10%**, every student will sign up for one topic which will be presented 10-15 min in class. Up to three student per lecture will present, starting in the second week of term.

The student presentation is a key element of your learning in Cell Biology putting you in the driver seat. There are two documented aspects why this helps you with learning:

1. Students learn more by teaching others. To teach another and to talk about a topic, students have to understand the concept themselves first (Wagner and Gansemer-Topf, 2005: Learning by teaching others: a qualitative Study exploring the benefits of Peer teaching; WGU Peer learning: Overview, benefits, and models <https://www.wgu.edu/blog/peer-learning2208.html#close>)

2. Students learn more by listing to each other because it supports diversity (WGU Peer learning: Overview, benefits, and models <https://www.wgu.edu/blog/peer-learning2208.html#close>)

Ideally students will explain the material well, as they know what their peers know and what they don't know!

Please note that the **dates for your presentations are preliminary** and we might lag behind (or be ahead of schedule) as the term progresses. If you cannot present in person on your day, contact BE immediately to discuss options.

Please see grading rubric for the student presentation in the presentation document (posted on Brightspace -> content-> introduction).

- **Paper assignment: 10%** completed in groups **during class time** on Wed June 12. You should read the paper beforehand. During the assignment students will answer questions about the paper in groups. There will be no deferred group paper assignment. If you are sick on the day of the assignment, contact BE immediately to discuss options.

Paper for the assignment: 'CREB non-autonomously Controls Reproductive Aging through Hedgehog/Patched Signaling' by Templeman et al., Dev Cell 54, 92-105, 2020.

- **Optional Assignment: 5%** participation. Pick and choose: Either **Artistic assignment** or EDI assignment. Can be done anytime but no later than Friday **June 28th**. Look for the submission drop box on Brightspace. Once you submit the final exam will count 35% instead of 40%.

1. **Artistic Assignment:** Get creative: write a poem with our scientific words used in the class, paint a picture related to our topics, dance your favorite scientific pathway or come up with your own creative idea and relate it to class content (video, podcast, meme...). Indicate on your submission if you are ok with me presenting your work to the class.

2. **EDI assignment:** Identify an injustice or EDI (equity, diversity, inclusion) issue related to cell biology and present your findings in your preferred mode (video, podcast, poem, ...). Indicate on your submission if you are ok with me presenting your work to the class.

Grade conversion:

A+ 90-100%; A 85-89.5%; A- 80-84.5%; B+ 77-79.5%; B 73-76.5%; B- 70-72.5%;

C+ 65-69.5%; C 60-64.5%; D 50-59.5%; F <49.5%

In determining final grades for the course, we will round your course score to the nearest whole percent. That is the official course grade that will be submitted for you.

We cannot change your grade for any reason, except if we have made an error calculating it. There is no extra work that you can do to raise your grade.

To pass the course, students must:

- 1) Write a minimum of four out of six **quizzes**
- 2) Write the **final** exam
- 3) **Peer Teach** (student presentation)
- 4) Demonstrate comprehension of scientific literature by answering questions of the **paper assignment**

If any of 1 through 4 are not completed, the student will automatically fail the course and receive an "N" ('Incomplete course requirements') on their transcript. An N is a failing grade, and it factors into a student's GPA as O. The maximum percentage that can accompany an N on a student's transcript is 49. If a student successfully completes 1

through 4, but the overall grade is 49% or lower, they will receive an “F” on their transcript.

How to be successful

Success is when you are happy and you learn. I strongly encourage you to **attend (!) lectures, listen, take notes and talk.**

It is very important to keep on track and to focus on class material. Especially summer courses are intense and we cover the same material in seven weeks that we usually cover in three months during the fall term. So, staying on top of things is key!

If you have questions, please ask! Class time is your time and used be used to ask/answer question and for discussions.

Form **study groups** with your peers: 4-5 students in one group is perfect. Only once you can talk about the material you really understand it.

I want you to know that **off – task activities** like checking email, text messaging, checking social network sites, is **negatively affecting students' grades (your own and your peers next to you) by more than 10% (Sana et al. 2013, Computers and education 62, 24-31).** I strongly recommend that you **turn off your off – task aps/programs during class time and study time to allow you to focus and not be distracted by social media and other non-course related sites!**

Important Dates

In the UVic calendar you will find a fuller list of important dates, but the ones we have listed below are the ones that will matter to students in Biology 360.

- Tuesday May 14: **First lecture** at 12.30 pm in Cor B135
- Monday May 20: Victoria Day, no classes today on campus
- Tuesday May 21: **Quiz 1** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm
- Tuesday May 28: **Quiz 2** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm
- Tuesday June 4: **Quiz 3** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm,
- Wednesday June 5 Read the paper for the paper assignment
- Tuesday June 11: **Quiz 4** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm
- Wednesday June 12: **Paper assignment**, questions answered in groups during class time
- Tuesday June 18: **Quiz 5** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm
- Tuesday June 25: **Quiz 6** at 12.30 pm in class invigilated on Brightspace, lecture at 12.50 pm

Friday June 28th: Last day, **Final exam at 12.30 pm** in class invigilated on Brightspace
Submission deadline for Optional Assignment (Artistic assignment or optional EDI assignment)

Stay healthy!

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. Mindfulness, meditation and yoga might help you to stay mentally healthy. Avoid last minute study panic by working regularly throughout the term: we recommend that you spend at **least 2-3 hours studying after each lecture!** This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle.

If you are not feeling well, stay at home. If you miss class, you will be able to catch up by watching the video/listen to the audio recording of live classes on Brightspace.

If I as instructor have to stay home, I will deliver course content by pre-recorded lectures.

General regulations:

Grading system: In determining final grades for the course, our spreadsheet will round your course score to the nearest whole percent. That is the official course grade that will be submitted for you.

We cannot change your grade for any reason, except if we have made an error calculating it. There is no extra work that you can do to raise your grade.

Please read the appropriate section of the current UVic Academic Calendar regarding your rights and obligations (<https://www.uvic.ca/calendar/>).

You are expected to **observe UVic academic regulations and standards of scholarly integrity** especially with regards to plagiarism and cheating.

UVic and we as instructors are committed to promoting, providing and protecting a supportive and safe learning and working environment for you and us.

I hope that you are enjoying a great summer term with Bio360 Cell Biology!

UVic support centers:

If you have any **technical issues** Brightspace, please contact the **computer help desk** via email (helpdesk@uvic.ca)

Support Connect: 24/7 help by phone or online

<https://www.uvic.ca/student-wellness/contacts/emergency-contacts/index.php#ipn-supportconnect-24-7-help>

Student Wellness Centre to support students' mental, physical and spiritual health

<https://www.uvic.ca/student-wellness/>

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <https://www.uvic.ca/services/cal/>. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. <https://www.uvic.ca/services/indigenous/students/index.php>

Office of Student life: student conduct, Student mental health, Sexualized violence awareness,... : <https://www.uvic.ca/services/studentlife/index.php>

UVic services:

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. Due to covid19 service is now offered by phone <https://www.uvic.ca/services/counselling/>*

Health Services - *University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives. UVic Health has transitioned to offering services almost entirely by telehealth. <http://www.uvic.ca/services/health/>*

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <https://www.uvic.ca/services/cal/>. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

Elders' Voices - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. <https://www.uvic.ca/services/indigenous/students/programming/elders/index.php>*

Sexualized Violence Prevention and Response at UVic

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out: Where: Sexualized violence resource office in EQHR; Sedgewick C119, Phone: [250.721.8021](tel:250.721.8021), Email: svpcoordinator@uvic.ca, Web: www.uvic.ca/svp

End of course outline