

BIOA01H3 F

Life on Earth: Unifying Principles

Fall 2021

COURSE SYLLABUS

Objectives and Outcomes

The primary goal of BIOA01 is to provide students with the strong foundation needed to become a successful biologist. During the term you will learn:

1. the fundamentals of evolution, speciation and population genetics, the major principles of cellular organization and metabolic processes, and the principles of gene action and inheritance;
2. the essential skills to become an active learner of science;
3. about some basic laboratory techniques that are required to pursue your chosen field of science;
4. some approaches for finding and reading relevant biology research articles;
5. the proper approach to collecting and analyzing data and then communicating the results using the writing and critical thinking skills presented in labs

Course Personnel

Name	Title	How to contact ¹	Remote Office Hours ²
Dr. Scott MacIvor	Instructor – Module 1	E-mail biolife.utscc@utoronto.ca (include MacIvor in subject line)	Please check Quercus for scheduled remote office hours for all course personnel (where applicable)
Dr. Yan Wang	Instructor – Module 2	E-mail biolife.utscc@utoronto.ca (include Wang in subject line)	
Dr. Aarthi Ashok	Instructor – Module 3	E-mail biolife.utscc@utoronto.ca (include Ashok in subject line)	
Karolyn Keir and Chris Armstrong	Lab/Course Coordinator For BIOA01 - contact regarding late enrollment, missed tests or labs, assignment submissions, marks management and general advising as related to the course	E-mail: biolife.utscc@utoronto.ca (include Keir or Armstrong in subject line) ²	
Taegan Perez	BIO Help TA	taegan.perez@mail.utoronto.ca (include BioHelp in subject line)	
	Laboratory TA	TBA on Quercus and in 1 st lab practical	

¹All e-mails must be sent from your University – issued e-mail account (@mail.utoronto.ca)

²Chris Armstrong will only respond to e-mails during regular business hours (Mon – Fri, 9am – 5pm)

Online learning in BIOA01

This Fall semester, we still find ourselves in the midst of a global pandemic. With the health and safety of our students at the forefront of our concerns, we cannot offer BIOA01 in a traditional manner. Our instructors, staff and teaching assistants have worked hard over the past year to make the transition to online learning seamless for all our students. Our objectives and outcomes outlined on the first page of this syllabus remain unchanged. Despite the lack of in-person laboratory experiments, we feel that the combination of learning resources we are implementing in BIOA01 will leave students with the same knowledge and skills as students who took the course in a more traditional manner.

Communicating information within BIOA01

Proper communication in BIOA01 is of the utmost importance. In addition to the syllabus, there is more information found posted about all things related to this course on our Quercus page. These resources should be able to answer the majority of questions that you may have regarding the course.

However, we understand that not all questions will be answered by these materials and we encourage students to e-mail the correct course staff (whether that be the instructors for lecture-related questions, the course coordinator for general questions regarding the course, assignments and online labs or your lab practical TA) at the appropriate e-mail address.

Please understand that this course is very large (~1000 enrolled students) and our course personnel will only be able to answer so many e-mails in a timely manner. We ask that you please read through all of the materials available to you on the course Quercus page and look through other resources readily available to all students via the University's website ([UTSC Homepage](#)) and our Department of Biological Sciences website ([UTSC Biological Sciences Homepage](#)) to attempt and answer your own questions first. If you still cannot find a satisfactory answer, please contact the appropriate course personnel.

Quercus (q.utoronto.ca)

As this is an online course, all information will be posted on the BIOA01 Quercus course page. Details such as contact information, virtual office hours, lectures, videos and notes, online labs, test dates and grades and information related to your online lab practicals will be posted on Quercus throughout the semester. It is your responsibility to check the BIOA01 Quercus page frequently and set up your account to receive notifications so you do not miss any important information. We also encourage students to use the discussion boards found on the course Quercus page to ask appropriate questions. There will be various discussion boards set up for both lecture and lab-based questions and they will be moderated regularly by course staff. Checking these regularly may help answer questions you have that another student has already asked!

Log on to Quercus by clicking the "Quercus" icon in the top left corner on the UTSC homepage and using your UTORid and password. Quercus can also be accessed using the link provided in the title of this section.

E-mail

To help your instructors stay organized and answer your e-mails more quickly and effectively, one central e-mail address serves BIOA01. To communicate with your Instructor and the Course Coordinator, please e-mail:

biolife.utsc@utoronto.ca

Include the name of the person you wish to e-mail in the subject line to help direct it. **If there is no name listed in the subject line, your e-mail may not be answered in a timely manner.**

Please do not use course staff's personal e-mail addresses for BIOA01 communication! Remember to always contact the Instructors, Course Coordinator and TAs using your UofT issued e-mail address. E-mails from other addresses (@gmail, @hotmail, @yahoo, etc.) will not be answered.

Required course materials:

1) Textbook

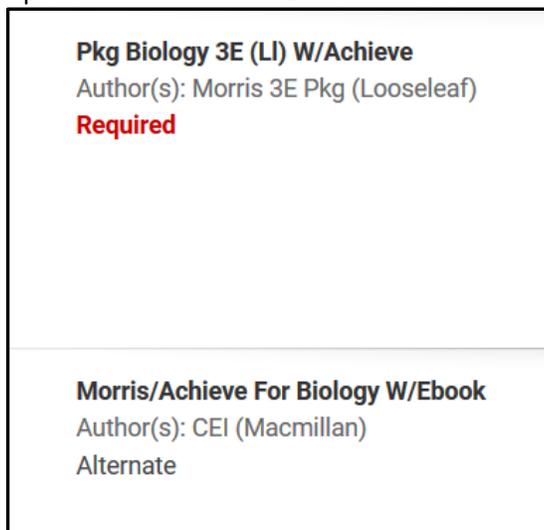
The complete textbook package can be purchased remotely from the UTSC Bookstore. The purchase of a textbook is required for BIOA01.

The textbook for BIOA01 is:

Morris J, Hartl D, Knoll A, Lue R, Michael M. 2019. Biology How Life Works (3rd ed.) W.H. Freeman & Company: Macmillan Education Imprint.

Purchasing the textbook can be done at: [University of Toronto BookStore](#)

You will see several options available for purchase on the UofT BookStore website:



The top option is the physical version of the textbook and the bottom option is the E-book version (no physical copy). You only need to **purchase one** of these options (either one will suffice). Both of these options will also include a 12 month access code for Achieve. Please note that August / September is a busy time for BookStore order fulfillment and students who order physical copies may experience delays in their shipping. We suggest ordering as soon as possible if you choose the physical version, as readings and Achieve assignments will be assigned starting in the first week of classes!

2) Achieve Access (online learning tool)

Achieve is an additional, online learning tool to help you master the material presented in BIOA01. An access code to Achieve is included with all textbook purchases through the UTSC Bookstore website. Achieve access can also be purchased separately through the MacMillan website ([Link to BIOA01 MacMillan products - Canadian site](#)).

Instructors for the course will assign specific chapter adaptive quizzes (the names for the assessments used within Achieve) that will be marked for credit in the course (see course evaluation section of the syllabi for how these assessments are weighted). You will have to create an account and add the course to access the assigned learning curves using the link provided below. The BIOA01 Fall 2021 Achieve site for registration can be found at the following link:

[BIOA01 Fall 2021 Achieve course page](#)

It is important to note that you will be asked to provide information to create an account on Achieve. Please ensure that you are using your UofT student information (your UofT issued e-mail address, your student number, etc.) when enrolling. If you use a non UofT e-mail or an incorrect student number, your submissions will not align with your information on Quercus and **you may receive a grade of 0 for all adaptive quizzes** if we are unable to decipher a student's identity. In a class of 1000 students, it is imperative that you create an account that matches with your student profile on Quercus.

Course Evaluation

Your final grade in BIOA01 will be determined as follows:

Laboratory component of final grade = 25% (see breakdown below)

Labs: 6 online lab assessments with associated Labster simulations x 2.5% = 15%

Every two weeks you will be responsible for completing 1-3 Labster lab simulations as well as additional exercises that will be posted to Quercus. Your mark for each lab will be comprised of your Labster score/scores, as well as an additional assignment. All of these assessments will be available to see on the course Quercus page and in the "Lab Topics and Schedule" section of the syllabus.

Labster software will be used to run through simulated labs and is required for you to complete the laboratory portion of BIOA01. All labs will have some amount of the grade for that particular lab associated with completing Labster simulations. All Labster simulations will be available through the Quercus course page as an assignment (this will link you to an external site for running through the simulation). More instructions on how to access these will be available on Quercus. Grades will automatically uploaded upon your completion of the simulation.

If you have any technical issues running the simulations, we ask that you contact Labster's Student Support and look at their FAQ page ([Labster FAQ and support](#)). Any other questions / concerns can be sent to the Course Coordinator by sending an email to biolife.utsc@utoronto.ca. Please note that Labster is only optimized for running in the Google Chrome web browser. Make sure you are also on a stable internet connection, as Labster simulations tend to freeze / crash when using internet provided through tethering or low bandwidth wireless connections (like those offered in places with free Wi-Fi).

****Please note that only your first completed attempt of each Labster simulation will be counted towards your final grade. If you encounter crashes / issues, you can restart the simulation from a checkpoint or the beginning to complete it****

Formal Lab Report (FLR) = 10%

You will complete a formal lab report write up for a lab that will be outlined to you in detail on Quercus. Real data will be collected from this experiment by a laboratory technician and you will be responsible for analyzing and interpreting these data. This lab report will be submitted online through Quercus. Due date and time as well as more information pertaining to this report will be available on Quercus.

Writing Assignment = 6%

You will be responsible for completing one writing assignment, selecting a topic from one Module of BIOA01. The writing assignment consists of three parts. More information regarding this writing assignment will be posted to Quercus in a comprehensive document outlining topics to choose from, instructions and due dates.

Lecture component of final grade = 69% (see breakdown below)

Module 1 Launchpad Assessments = 3%

Module 2 Launchpad Assessments = 3%

Module 3 Launchpad Assessments = 3%

Term Test for Module 1 = 20%

Term Test for Module 2 = 20%

Term Test for Module 3* = 20%

***term test for Module 3 will take place during the final exam period in December 2021**

****Each term test will only cover material from that particular module; no term tests are cumulative**

Course Content

A. Lecture Topics(tentative)

Module 1: Evolution	Lecture topics include: <ul style="list-style-type: none"> - Evolution - Classification and Phylogeny - Speciation - Tree of Life: Eukaryotic cells - Evo – Devo
Module 2: Cell Biology and Metabolism	<ul style="list-style-type: none"> - Cells - Respiration - Photosynthesis - Tree of Life: Fungi
Module 3: Gene Action and Inheritance	<ul style="list-style-type: none"> - DNA: the stuff of heredity - Peas, Pedigrees and Probability - Transcription and Translation - Tree of Life: Viruses & Prions

B. Lab Topics and Schedule (all times are EST)

	Lab topic with accompanying lab assessment	Labster simulations to complete	Date available	Due date (All Labster simulations are due by 12:00pm (noon) and Lab assessments by 5:00pm)
Lab 1	Appreciating the Diversity of Life	Two: Biomes <i>and</i> Biodiversity	September 7 th	September 17th
Lab 2	Phylogenetic analysis	Two: Are you related to a sea monster <i>and</i> Journey of the Canids	September 20 th	October 1st
Lab 3	Photosynthesis	Two: Electron Transport Chain <i>and</i> Pigment Extraction	October 4 th	October 22nd
Lab 4	Microscopy	Two: Microscopy <i>and</i> Fluorescent Microscopy	October 25 th	November 5th
Lab 5	Polymerase chain reaction and gel electrophoresis	Two: Gel electrophoresis <i>and</i> Pipetting	November 8 th	November 19th
Lab 6	Mendelian genetics	Two: Meiosis – How is color blindness inherited <i>and</i> Mendelian inheritance	November 22 nd	December 3rd

Course Regulations

Lectures

Asynchronous lectures will be posted by the instructors to the course Quercus page. These lectures given by the instructors are of high audio and visual quality and cover the same amount of material as lectures presented live. There are no live lectures in which you will need to attend virtually for BIOA01. Each instructor will announce office hours via Quercus and provide links to attend.

To get maximum benefit from the lectures in this course, students are advised to:

- **read the relevant sections in your textbook before the lecture.** Do not take extensive notes or memorize the material at this stage – just read and become familiar with the terms and concepts to be covered
- **download posted lecture material** from Quercus before each lecture
- **during lectures, take your own notes** with the aim of understanding the main concepts covered
- re-read the relevant sections in your textbook as needed after lecture and create your own study notes; review your notes frequently
- **arrange to speak with the Instructor** during scheduled online office hours or by appointment if having difficulties understanding material covered in lectures

Engaging in Online Labs via Zoom meetings

Make sure you have enrolled yourself in a lab practical for BIOA01 on ACORN. Your submitted course assessments will not be marked if you have not enrolled in a lab practical and you will receive a 0 for all assessments until you do so.

The lab practicals will be offered in bi-weekly 90-minute scheduled meetings with your practical TA (who will introduce themselves in the first meeting). These sessions are meant to be utilized as a way to have your TA relay important information to you as it pertains to BIOA01 and to go over information pertaining to the current lab assessments that students will be working on. TAs will also help facilitate learning by offering engaging topics and engagement activities related to the topic of the labs as well as to ask questions that will stimulate conversation between students and the TA. TAs will also be able to answer student questions during these periods.

Attendance at these online lab practicals will be mandatory in BIOA01. If you miss attending your assigned lab practical, you will be given a grade of 0 for any associated work with that lab (lab assessment and any Labster simulations).

These sessions will occur using the online meeting platform Zoom. A link and any other pertinent information regarding attendance to these meetings will be posted to the course Quercus site in advance. You will be able to join these sessions via computer or other device. You will need a microphone if you wish to engage and ask questions verbally during the meetings. We ask that you please be respectful when participating in these meetings, as there will be other students attending these meetings listening intently to the information being conveyed. Mute your microphone when not speaking and use the chat function to ask/answer questions when applicable.

It is important to stress that because we are using a meeting platform in which your account may not be linked to your UofT credentials, you will be responsible for ensuring that you are easily identifiable to your TA during your online lab practical by having your full name (first and last name) as it is found on your UofT student profile displayed as your user name (the name that displays when you use Quercus or log into ACORN). Students who attend a lab practical and are not easily identifiable will be marked as absent and receive a 0 for all associated lab assignments for that particular lab; no exceptions! TAs will use attendance taken during the lab practical and compare it to their list of students on Quercus. Students can obtain a UofT student Zoom account using the following link and logging in using your UofT UTORID credentials: <https://utoronto.zoom.us/>

To make sure everyone is clear when they should be attending their online lab practicals, there is [a list of the practical schedule posted in the syllabus and on the Quercus course page](#). These meetings via Zoom only take place for each student once every two weeks. **Odd-numbered practicals** will attend their BB collaborate meetings during the first week each new lab is available (eg. PRA 0001 would attend their scheduled online lab practical for Lab 1 on Tuesday September 7th at 10:30am EST) while **even-numbered practicals** will attend in the second week (eg. PRA 0002 would attend their online lab practical for

Lab 1 on Tuesday September 14th at 10:30am EST). Make sure to check this information and remember your practical schedule; these will be your only regularly scheduled meetings with your TA for the semester and missing them means missing out on valuable information and an opportunity for (digital) face-to-face interaction! If you have an issue with attending your scheduled online lab practical, please contact the course coordinator. The course coordinator is unable to switch you between lab practicals but students can feel free to switch themselves using ACORN. Please note that only lab practicals which currently have room can be switched into; lab practicals that have full enrollment cannot be transferred into by other students. After the last date for students to add themselves to a practical (September 21st), please contact the program coordinator Jennifer Campbell (jac.campbell@utoronto.ca) for assistance with switching practicals (legitimate reasons only).

Completion of lab simulations, online lab assessments, lab reports and any other associated work is mandatory in BIOA01. NO late assignments will be accepted without proper documentation (see procedures for accommodation requests). **Late formal lab reports and writing assignments** will have a late penalty automatically applied (10% of the mark per day including weekends); work will not be accepted if more than 5 days late.

There are lab exercises that will ask you to complete the tasks assigned by yourself, either in the comfort of your home or by venturing outside. We ask that you please follow all health and safety protocols when doing so (washing hands regularly, avoiding contact with your face and eyes, practicing social distancing, wearing a face covering when appropriate and staying home if sick). Please contact the Course Coordinator if there are issues with performing these tasks.

Facilitated Study Groups (FSGs)

BIOA01 is supported by an independently-run facilitated study group. These weekly study sessions are open to all BIOA01 students. Attendance is voluntary. If you have questions, visit the FSG website at: [FSG Webpage](#)

Please note: All materials used in FSG sessions (handouts, questions etc.) are created by the FSG moderators and not by the course instructors. Please ensure that you contact the FSG moderators about any questions related to these materials. Please also note that while questions used in the FSG sessions are useful to promote your understanding of course concepts, they may **NOT** be the same format used for the term tests in BIOA01.

Statement regarding use of Plagiarism Detection Software in BIOA01

In BIOA01, we will be using Ouriginal (through Quercus) for the submission of the writing assignment and the FLR. Failure to submit or failure to submit a Ouriginal readable document will result in a grade of 0. You should be aware of the following policy for the use of Ouriginal at the University of Toronto:

“Normally, students will be required to submit their course essays to Ouriginal.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their reports to be included as source documents in the Ouriginal.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of the Ouriginal.com service are described on the Ouriginal.com website.”

List of online lab practicals offered in BIOA01

****all students must enroll in one of these lab practicals (in addition to the lecture section you enrolled in) and attend on a bi-weekly basis to receive credit for completed lab assignments****

Practical #	Day and Time to attend lab practical (all times are EST)	Practical #	Day and Time to attend lab practical (all times are EST)
0001	Tuesdays 9:00 – 10:30am	0022	Wednesdays 1:00 – 2:30pm
0002	Tuesdays 9:00 – 10:30am	0023	Wednesdays 2:30 – 4:00pm
0003	Tuesdays 10:30am – 12:00pm	0024	Wednesdays 2:30 – 4:00pm
0004	Tuesdays 10:30am – 12:00pm	0025	Thursdays 9:00 – 10:30am
0005	Tuesdays 10:30am – 12:00pm	0026	Thursdays 9:00 – 10:30am
0006	Tuesdays 10:30am – 12:00pm	0027	Thursdays 10:30 – 12:00pm
0007	Tuesdays 12:00 – 1:30pm	0028	Thursdays 10:30 – 12:00pm
0008	Tuesdays 12:00 – 1:30pm	0029	Thursdays 12:00 – 1:30pm
0009	Tuesdays 1:30 – 3:00pm	0030	Thursdays 12:00 – 1:30pm
0010	Tuesdays 1:30 – 3:00pm	0031	Thursdays 1:30 – 3:00pm
0011	Tuesdays 1:30 – 3:00pm	0032	Thursdays 1:30 – 3:00pm
0012	Tuesdays 1:30 – 3:00pm	0033	Thursdays 3:00 – 4:30pm
0013	Tuesdays 3:00 – 4:30pm	0034	Thursdays 3:00 – 4:30pm
0014	Tuesdays 3:00 – 4:30pm	0035	Thursdays 4:30 – 6:00pm
0015	Tuesdays 4:30 – 6:00pm	0036	Thursdays 4:30 – 6:00pm
0016	Tuesdays 4:30 – 6:00pm	0037	Mondays 10:00 – 11:30am
0017	Wednesdays 10:00 – 11:30am	0038	Mondays 10:00 – 11:30am
0018	Wednesdays 10:00 – 11:30am	0039	Mondays 11:30am – 1:00pm
0019	Wednesdays 11:30am – 1:00pm	0040	Mondays 11:30am – 1:00pm
0020	Wednesdays 11:30am – 1:00pm	0041	Mondays 2:30 – 4:00pm
0021	Wednesdays 1:00 – 2:30pm	0042	Mondays 2:30 – 4:00pm

If you have not yet added yourself to a lab practical, click on the following link for information about how to do so: [How to enroll in a lab practical](#)

Using the link provided above, open the third drop – down menu (titled “Switch course sections [eg. tutorials and practicals]”) and follow the instructions provided, except you will simply be selecting a lab practical to join rather than switching between practicals. If you encounter issues with this process, please contact the course coordinator at biolife.utsc@utoronto.ca

Procedures for accommodation requests for course work and term tests

In order to be eligible for consideration for a missed term test or to submit other course work with accommodation, students must provide a valid documented reason to the Course Coordinator.

If you miss term work (including term tests) due to illness you must **self-declare within 48 hours via ACORN** (<https://www.acorn.utoronto.ca/>). **Please note it is mandatory for you to fill in the notes field within the self-declaration tool on Acorn to specify what term work you are missing and applicable due dates to be considered.** For some additional instructions on how to declare illness please review the following resource <https://help.acorn.utoronto.ca/blog/ufags/how-do-i-declare-an-absence/>. If you are missing term work for another reason including: short-term illness under the care of a Physician or someone affiliated with Health and Wellness, disability reasons, a family death, vehicle accident, essential travel that is not vacation related, or varsity activities must e-mail the course instructor **and** Jennifer Campbell (jac.campbell@utoronto.ca) in advance or within 48 hours of the term work due date. Please note all documentation will be verified for authenticity by Jennifer Campbell and any accommodations (if applicable) will be determined by the course instructor. Please note that we understand that life happens and you may miss term work for valid reasons and we will help you navigate through those situations. Please remain in communication with our departmental admin office as well as your course's teaching team.

If you cannot write a Friday evening or Saturday term tests for religious reasons, please notify the Course Coordinator in writing by e-mail to biolife.utsc@utoronto.ca within one week of the announced term test date; an alternative time will be presented if approved by the Instructor.

For a missed term test in the Final Exam Period (December 2021):

Students must follow the procedure outlined in the provided link ([UTSC Deferred Exam Information](#)) and follow the procedures outlined in order to arrange to write a Deferred Final Exam (DFE). The DFE will be scheduled during the Winter 2022 Exam Period taking place in April 2022. Please note that the format of the DFE may differ from the original exam while covering the same content.

Important UTSC Policies

UTSC is dedicated to fostering an academic community in which the learning and scholarship of every member may flourish, with vigilant protection for individual human rights and a resolute commitment to the principles of equal opportunity, equity and justice.

1) Information on Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a University, and to ensure that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines behavior that constitutes academic dishonesty and the process for addressing such offenses ([Code of Behaviour on Academic Matters](#)).

2) Information Regarding AccessAbility Services at UTSC

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to e-mail the instructors in BIOA01 and/or the AccessAbility Services Office as soon as possible. Please note that all inquiries are confidential! You can contact AccessAbility Services at 416-287-7560, by e-mailing ability.utsc@utoronto.ca or visiting their website (www.utsc.utoronto.ca/ability). There can be a delay from when you reach out and an appointment is set, so please contact AccessAbility as soon as possible upon starting the semester if required.

3) Information on Religious Observances

It is policy at UTSC to provide special consideration for recognized holy days which may be observed by our students. Though not all holy days require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is your responsibility to check the due dates for all course work and scheduled dates for tests/exams on a regular basis. Inform the Course Coordinator of any potential conflicts at least 7 days prior to the date of the test/assignment. Failure to do so may result in special consideration not being granted (documentation may be required).

4) Procedures Regarding Final Marks

The final mark in BIOA01 is based on term work; the evaluation breakdown is given in this syllabus on page 4. After the final exam, marks are calculated and submitted to the Department for review. Once approved, the final mark for each student in the course will be released on ACORN. Once final marks are posted, it is an academic offense to ask for your mark to be changed (See Academic Handbook)

Final marks are not negotiable and instructors are not permitted to discuss final marks with students. If students have concerns about their final mark, they should consult the proper procedures to be followed as outlined by the Registrar's office: <https://www.utsc.utoronto.ca/registrar/petitions>

Department of Biological Sciences Statement on Equity, Diversity and Inclusion

The Department of Biological Sciences acknowledges the barriers that people of colour and other marginalized groups face, particularly in science and academia. As a department, we are highly committed to creating a welcoming scientific community where everyone feels safe, comfortable participating, and which provides the necessary support to thrive. We acknowledge and are disheartened that Black, Indigenous and other marginalized communities are, and always have been, disproportionately impacted by systemic racism and face barriers within academia. In August 2020, our department formed an equity and inclusion task force that will meet regularly to discuss equity and inclusion and enact improvements to our departmental practices by actively engaging with the literature on best practices, and seeking ongoing input from all members of the department including students, post-doctoral fellows, staff and faculty. Among our main priorities will be a commitment to hire and support faculty and staff that are representative of our diverse student population, and to promote a departmental culture that will foster inclusive teaching and research excellence.