BIOL/BIOC 4502/5502: Bacterial Diversity and Physiology Laboratory  
Fall 2021   LIFE A310

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Office Phone: (940) 565-3280  
Office Hours: Friday 9am-10am (or by scheduled appointment)

Course Pre-requisites, Co-requisites, and/or Other Restrictions: Previous or current enrollment in BIOL/BIOC 4501.

Course Description and Objectives: Microbial diversity laboratory is largely focused on microbe isolation techniques, including the use of selective and differential growth medium, and microscopic examination of an array of microbes. Over the semester, we will quantify, isolate, and identify the symbiotic yeast and bacteria found in kombucha (a commercially available pro-biotic drink)/ During this process students will learn:

• Techniques used to isolate microbes from mixed cultures using differential/selective growth medium
• Primer design for ribosomal RNA gene amplification
• BLAST analysis and sequence alignment
• Phylogenetic analysis

Labster Simulations:
You will be required to complete the following Labster laboratory simulations (available within Canvas) that will reinforce/add to several concepts related to your in-person laboratory work. The simulations need to be completed prior to the associated lab as indicated in the topic schedule and in Canvas.
Aseptic technique
Bacterial Quantification by Culture
Bacterial Isolation
Bacterial Growth Curves
Light Microscopy
Fermentation
Next Generation Sequencing
Bioinformatics

Electronic Lab Notebook and Short Report: You will insert images/cfu calculations, and/or videos into a word document organized by date to document your lab results. It should contain a detailed protocol that contains a complete list of the materials used, the process, and weekly results. For the kombucha experiment, document the development of the symbiotic culture of bacteria and yeast (SCOBY) with pictures and/or videos. You should also include weekly written observations (color changes, SCOBY thickening, cloudiness/ clarity, and smell) and document any potential issues that arise. If you observe mold (green or black growth on the top of the kombucha/SCOBY) Dump it
and restart the process. By the end of the semester you should be able to describe the microbial processes occurring during the kombucha development through your own independent research. Thus, you are required to write a lab report written in a similar style as a research paper that includes an abstract (<250 words), a referenced introduction that gives context to the study and scientific question, materials and methods, and results and discussion that details the experiments and figures of resultant data (cfu/mL of 4 growth medium, isolated microbe micrographs, isolated microbe sequence identification and/or phylogenetic analysis, and puts the results in the context of current knowledge/literature. Make sure to include a references section styled like articles published in the journal Applied and Environmental Microbiology.

Electronic lab notebook and lab report due November 30, 2021 (must be uploaded to Canvas by 11:59pm).

**Topic Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Weekly Topic/Module (Labster Simulation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 2/7</td>
<td>Lab Safety/Selective; Differential Medium/Dilutions (Aseptic technique)</td>
</tr>
<tr>
<td>9/14</td>
<td>Winogradsky Column Set-up (Bacterial Quant)</td>
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<tr>
<td>16/21</td>
<td>Kombucha inoculation and experiment start (Bacterial Isolation)</td>
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<tr>
<td>23/28</td>
<td>Kombucha microbe quant cont. (Bacterial Growth Curves)</td>
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<tr>
<td>30/Oct. 5</td>
<td>Kombucha microbe quant cont. (Light Microscopy)</td>
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<tr>
<td>Oct. 7/12</td>
<td>Kombucha microbe quant cont. and isolation</td>
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<tr>
<td>14/19</td>
<td>Kombucha microbe quant and isolation cont.(Brett. PCR) (Fermentation)</td>
</tr>
<tr>
<td>21/26</td>
<td>Kombucha microbe quant and isolation cont./microscopy</td>
</tr>
<tr>
<td>28/Nov. 2</td>
<td>Winogradsky column results and microscopy (Next Gen. Seq.)</td>
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<tr>
<td>Nov. 4/9</td>
<td>Prepare samples for sequence identification</td>
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<tr>
<td>11/16</td>
<td>Bioinformatic analysis (Bioinformatics)</td>
</tr>
<tr>
<td>18/23</td>
<td>Bioinformatic analysis/clean-up</td>
</tr>
<tr>
<td>25</td>
<td>Thanksgiving</td>
</tr>
<tr>
<td>30</td>
<td><strong>Electronic notebook and lab reports due</strong></td>
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</table>

*Please note this schedule is tentative and subject to change by the instructor.

**Grading:**

Your final course grade will include online Labster simulations, the lab notebook, lab report, and participation:

- Labster: 150pts
- Electronic Lab Notebook: 150pts
- Kombucha lab write-up: 100pts
- Lab participation/attendance: 100pts

Grading will follow a standard scale:

- (448 – 500 points) A
- (398 – 447 points) B
- (348 – 397 points) C
- (298 – 347 points) D
- (< 297 points) F
**Course Technology & Skills:**

Minimum Technology Requirements:
- Computer
- Reliable internet access
- Speakers
- Microphone
- Plug-ins
- Microsoft Office Suite or other software
- [Canvas Technical Requirements](https://clear.unt.edu/supported-technologies/canvas/requirements)

Computer Skills & Digital Literacy:
- Using Canvas
- Using email with attachments
- Downloading and installing software
- Using word document programs
- Searching for primary literature via UNT library

Technical Assistance
Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

**UIT Help Desk:** [UIT Student Help Desk site](http://www.unt.edu/helpdesk/index.htm)
**Email:** helpdesk@unt.edu
**Phone:** 940-565-2324
**In Person:** Sage Hall, Room 130
**Walk-In Availability:** 8am-9pm

**Telephone Availability:**
- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

**Laptop Checkout:** 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328)

**Course Policies**

**Face Coverings**
UNT encourages everyone to wear a face covering when indoors, regardless of vaccination status, to protect yourself and others from COVID infection, as recommended by current CDC guidelines. Face covering guidelines could change based on community health conditions.
Attendance
Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

If you are experiencing any symptoms of COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.

Course Materials for Remote Instruction
Remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Students will need access to a [webcam and microphone – faculty member to include what other basic equipment is needed] to participate in fully remote portions of the class. Information on how to be successful in a remote learning environment can be found at https://online.unt.edu/learn

UNT Policies

Academic Integrity Policy
Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. [Insert specific sanction or academic penalty for specific academic integrity violation.]

ADA Policy
UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one’s specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website (https://disability.unt.edu/).

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)
The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures,
and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

Emergency Notification & Procedures
UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

Retention of Student Records
Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student’s records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University’s policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Acceptable Student Behavior
Student behavior that interferes with an instructor’s ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student’s conduct violated the Code of Student Conduct. The University’s expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT’s Code of Student Conduct (https://deanofstudents.unt.edu/conduct) to learn more.

Access to Information - Eagle Connect
Students’ access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student’s Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (https://it.unt.edu/eagleconnect).

Student Evaluation Administration Dates
Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 [insert administration dates] of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (http://spot.unt.edu/) or email spot@unt.edu.

Survivor Advocacy
UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or
someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-5652648.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website (http://www.ecfr.gov/). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student’s physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student’s course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student’s full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student’s responsibility to do the following:

(1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.

(2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.
See [UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses](https://policy.unt.edu/policy/07-002).

**Use of Student Work**

A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student’s permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student’s written permission.

Download the UNT System Permission, Waiver and Release Form

**Transmission and Recording of Student Images in Electronically-Delivered Courses**

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.

2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.

3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students’ images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

   Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

   No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.

**Class Recordings & Student Likenesses**

Synchronous (live) sessions in this course may be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and
are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

Academic Support & Student Services

Student Support Services

Mental Health
UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- [Student Health and Wellness Center](https://studentaffairs.unt.edu/student-health-and-wellness-center)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services)
- [UNT Care Team](https://studentaffairs.unt.edu/care)
- [UNT Psychiatric Services](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry)
- [Individual Counseling](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)

Chosen Names
A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- [UNT Records](https://studentaffairs.unt.edu/student-health-and-wellness-center)
- [UNT ID Card](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry)
- [UNT Email Address](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry)
- [Legal Name](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry)

*UNT euIDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.*

Pronouns
Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you, much like your name, and can be shared with a name when making an introduction, both virtually and in-person. Just as we ask and don’t assume someone’s name, we should also ask and not assume someone’s pronouns.

You can [add your pronouns to your Canvas account](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling) so that they follow your name when posting to discussion boards, submitting assignments, etc.

Below is a list of additional resources regarding pronouns and their usage:

- [What are pronouns and why are they important?](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)
- [How do I use pronouns?](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)
- [How do I share my pronouns?](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)
- [How do I ask for another person’s pronouns?](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)
- [How do I correct myself or others when the wrong pronoun is used?](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)
Additional Student Support Services

- **Registrar** ([https://registrar.unt.edu/registration](https://registrar.unt.edu/registration))
- **Financial Aid** ([https://financialaid.unt.edu/](https://financialaid.unt.edu/))
- **Student Legal Services** ([https://studentaffairs.unt.edu/student-legal-services](https://studentaffairs.unt.edu/student-legal-services))
- **Career Center** ([https://studentaffairs.unt.edu/career-center](https://studentaffairs.unt.edu/career-center))
- **Multicultural Center** ([https://edo.unt.edu/multicultural-center](https://edo.unt.edu/multicultural-center))
- **Counseling and Testing Services** ([https://studentaffairs.unt.edu/counseling-and-testing-services](https://studentaffairs.unt.edu/counseling-and-testing-services))
- **Pride Alliance** ([https://edo.unt.edu/pridealliance](https://edo.unt.edu/pridealliance))
- **UNT Food Pantry** ([https://deanofstudents.unt.edu/resources/food-pantry](https://deanofstudents.unt.edu/resources/food-pantry))

Academic Support Services

- **Academic Resource Center** ([https://clear.unt.edu/canvas/student-resources](https://clear.unt.edu/canvas/student-resources))
- **Academic Success Center** ([https://success.unt.edu/asc](https://success.unt.edu/asc))
- **UNT Libraries** ([https://library.unt.edu/](https://library.unt.edu/))
- **Writing Lab** ([http://writingcenter.unt.edu/](http://writingcenter.unt.edu/))