Welcome to this molecular biology lab course! My name is Cécile Fréreux and I will be your instructor for this class. I have always had a passion for biology and have specialized in molecular, cell biology, biochemistry and genetics. I am glad to share one of my favorite topics with you and I’m looking forward to meeting you all in class.

Course description
Molecular biology is the study of macromolecules and molecular mechanism in living organism. Together we will study how DNA, RNA and proteins are synthesized and how they interact in the cell. We will learn how to extract, purify, and observe these three types of macromolecules.

Course learning outcomes
After completing this course and having actively participated in discussions and assignments you will be able to:

- Operate the standard equipment used in molecular biology
- Conduct and troubleshoot experiments about DNA and RNA extraction, protein purification, PCR, and gel electrophoresis
- Explain the structure, synthesis and functions of DNA, RNA, and proteins.
- Interpret current literature in molecular biology.
- Discuss the relevance of nanoscopic biomolecular mechanisms to the world we live in.
- Communicate your results efficiently both orally and in writing
**Do I need to be computer savvy to take this course?**
Not really; the few teaching tools that we will be using this semester have a straightforward interface. You will need a reliable Internet connection, a laptop or other computer and some knowledge of OAKS.

For all computer, software or access problems, please contact:
1. Student Computing Support (843-953-5457; studentcomputingsupport@cofc.edu)
2. Helpdesk (843-953-3375; helpdesk@cofc.edu)

**How do I know what to study?**
Easy! This course is organized in 12 modules. Each module will last one week. Modules will open sequentially every Sunday and remain open until the end of the course.

Each module consists in 2 submodules:
1. *“Before the lab”* - you will be asked to read the lab outline and familiarize yourself with the lab protocol.

2. *“After the lab”* – you will be asked to read a provided research news article and answer a series of questions in writing. Estimated weekly time for the “After the lab” submodule: at least 3 hours.

**What should I do if I have a course related question?**
The great news is that we are all going to help you!
1. Write your question on our Discussion Board anytime.
2. Give your classmates some time to read your question and post their answer.
3. Reply to your thread to thank participants and indicate whether you received the help you needed or if you need further assistance. Please be patient and never give up until you got your answer.

New question? Start a new thread and repeat the process.

**What should I do if I have a personal issue?**
If your issue cannot be addressed on the Discussion Board, please remember that I am here for you personally throughout the semester.
1. Contact me by email anytime and allow me up to 24 hours to reply on weekdays and up to 48 hours on weekends.
2. Need to speak to me instead? Request an appointment by email and I will set up a Zoom Meeting so we can chat and see each other live.

**Do you have office hours?**
Request an appointment by email and I will set up a Zoom Meeting so we can chat and see each other live.

**Do you have any tips on how to succeed in this course?**
- Check Oaks on a regular basis, this is where I post all my lab documents as well as important information.
- Don’t be afraid to ask questions. I welcome questions, before, during and after each lab.
- Participate in this course by answering the questions I ask during labs.
- As we progress through the course, try to build on the information presented in the previous laboratories. This will help you to build the “big picture” of the key concepts and scientific principles in molecular biology.
SNAP Accommodations
I want all motivated students to succeed in this course.
If you have an approved SNAP accommodation, please email me the Professor Notification Letter and discuss your needs during the first week of class via email.

Academic Integrity
You are responsible for understanding and adhering to College policies regarding academic honesty, as specified in the current Student Handbook:
http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

All work must be original and must reflect careful preparation. Standards of originality and thorough preparation require that the viewpoint, structure, and style of writing and presentations be your own. The undocumented use of someone else’s words or ideas in any medium is a serious offense, subject to disciplinary action that may include failure in the course and/or dismissal from the College. Please remember that unauthorized collaboration—working together without permission—is a form of cheating.

Not sure you’re doing the right thing? Please ask me for assistance, I am always happy to help.

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Assessment</th>
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</thead>
<tbody>
<tr>
<td>95 – 100% = A</td>
<td>Worksheet Lab#1 6</td>
</tr>
<tr>
<td>90 – 94% = A-</td>
<td>Worksheet Lab#2 6</td>
</tr>
<tr>
<td>87 – 89% = B+</td>
<td>Worksheet Lab#3 6</td>
</tr>
<tr>
<td>83 – 86% = B</td>
<td>Worksheet Lab#4 6</td>
</tr>
<tr>
<td>80 – 82% = B-</td>
<td>Worksheet Lab#5 6</td>
</tr>
<tr>
<td>77 – 79% = C+</td>
<td>Worksheet Lab#6 6</td>
</tr>
<tr>
<td>73 – 76% = C</td>
<td>Worksheet Lab#7 6</td>
</tr>
<tr>
<td>70 – 72% = C-</td>
<td>Worksheet Lab#8 6</td>
</tr>
<tr>
<td>67 – 69% = D</td>
<td>Worksheet Lab#9 6</td>
</tr>
<tr>
<td>63 – 66% = D</td>
<td>Worksheet Lab#10 6</td>
</tr>
<tr>
<td>60 – 62% = D-</td>
<td>Worksheet Lab#11 6</td>
</tr>
<tr>
<td>Below 60% = F</td>
<td>Worksheet Lab#12 6</td>
</tr>
</tbody>
</table>

Please:
- Submit your worksheet answers before the deadline. Late submissions won’t be accepted.
- Note that attendance and participation in each individual lab is worth 1.5% of your semester grade (18% total). There won’t be any makeup points in later lab. If you miss labs, those points are lost.
1. Honor Code and Academic Integrity
   “Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved. Incidents where the instructor determines the student’s actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student’s file.

   Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

   Students can find the complete Honor Code and all related processes in the Student Handbook at: http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php.”

2. Disability/Access Statements
   The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed.

3. OAKS
   OAKS, including Gradebook, will be used for this course throughout the semester to provide the syllabus and class materials and grades for each assignment, which will be regularly posted.

4. Continuity of Learning
   Due to social distancing requirements, this class will include a variety of online and technology enhanced components to reinforce continuity of learning for all enrolled students. Before the drop/add deadline, students should decide whether the course plan on the syllabus matches their own circumstances.

5. Recording of Classes

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**Lecture Schedule**

<table>
<thead>
<tr>
<th>Lab</th>
<th>Date</th>
<th>Topic</th>
<th>Worksheet article</th>
<th>WS due</th>
<th>Laid-back mini lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab1</td>
<td>9/1-2</td>
<td>Introduction</td>
<td>A wealth of discovery built on the Human Genome Project</td>
<td>Nature 11-Feb-21</td>
<td>5-Sep Structure of DNA</td>
</tr>
<tr>
<td>Lab2</td>
<td>9/8-9</td>
<td>Bacterial transformation</td>
<td>Weird viral DNA spills secrets to biologists</td>
<td>Nature 13-May-21</td>
<td>12-Sep Replication</td>
</tr>
<tr>
<td>Lab3</td>
<td>9/15-16</td>
<td>Plasmid mini-preparation</td>
<td>The water paradox and the origins of life</td>
<td>Nature 10-Dec-21</td>
<td>19-Sep Nucleosome and chromatin</td>
</tr>
<tr>
<td>Lab4</td>
<td>9/22-23</td>
<td>Extraction and separation of total RNA</td>
<td>How COVID unlocked the power of RNA</td>
<td>Nature 14-Jan-21</td>
<td>26-Sep Structure of RNA</td>
</tr>
<tr>
<td>Lab5</td>
<td>9/29-30</td>
<td>Enrichment of thermostable phi and PCR</td>
<td>Protein assemble as they are being made</td>
<td>Nature 13-Sep-18</td>
<td>3-Oct Structure of protein</td>
</tr>
<tr>
<td>Lab6</td>
<td>10/6-7</td>
<td>Purification of recombinant T7R-NAP</td>
<td>An overlooked protein crosslink</td>
<td>Nature 20-May-21</td>
<td>10-Oct Transcription</td>
</tr>
<tr>
<td>Lab7</td>
<td>10/13-14</td>
<td>DNA and protein electrophoresis</td>
<td>When antibodies mislead: the quest for validation</td>
<td>Nature 10-Sep-20</td>
<td>17-Oct Splicing and modifications</td>
</tr>
<tr>
<td>Lab8</td>
<td>10/20-21</td>
<td>GMO testing</td>
<td>First genetically modified mosquitoes released in the US</td>
<td>Nature 13-May-21</td>
<td>24-Oct Translation apparatus</td>
</tr>
<tr>
<td>Lab9</td>
<td>10/27-28</td>
<td>Gene silencing with CRISPR</td>
<td>Neanderthal-like &quot;mini-brains&quot; created in the lab with CRISPR</td>
<td>Nature 18-Feb-21</td>
<td>31-Oct Translation mechanisms and regulation</td>
</tr>
<tr>
<td>Lab10</td>
<td>11/3-4</td>
<td>STR analysis</td>
<td>Crimefighting with family trees</td>
<td>Nature 10-Sep-20</td>
<td>7-Nov Transcription regulation in prokaryotes</td>
</tr>
<tr>
<td>Lab13</td>
<td>12/1-2</td>
<td>Interview</td>
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</tbody>
</table>

Below, please find eight additional syllabus statements that were drafted by our administration and that are common to all Fall 2021 courses:

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Class sessions will be recorded via both voice and video recording. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class.

6. Inclement Weather, Pandemic or Substantial Interruption of Instruction
If in-person classes are suspended, faculty will announce to their students a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools. Center for Student Learning:
The Center for Student Learning’s (CSL) academic support services provide assistance in study strategies, speaking & writing skills, and course content. Services include tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu or call (843) 953-5635.

7. Mental & Physical Wellbeing
At the college, we take every students’ mental and physical wellbeing seriously. If you find yourself experiencing physical illnesses, please reach out to student health services (843.953.5520). And if you find yourself experiencing any mental health challenges (for example, anxiety, depression, stressful life events, sleep deprivation, and/or loneliness/homesickness) please consider contacting either the Counseling Center (professional counselors at http://counseling.cofc.edu or 843.953.5640 3rd Robert Scott Small Building) or the Students 4 Support (certified volunteers through texting "4support" to 839863, visit http://counseling.cofc.edu/cct/index.php, or meet with them in person 3rd Floor Stern Center). These services are there for you to help you cope with difficulties you may be experiencing and to maintain optimal physical and mental health.

8. Food & Housing Resources
Many CofC students report experiencing food and housing insecurity. If you are facing challenges in securing food (such as not being able to afford groceries or get sufficient food to eat every day) and housing (such as lacking a safe and stable place to live), please contact the Dean of Students for support (http://studentaffairs.cofc.edu/about/salt.php). Also, you can go to http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php to learn about food and housing assistance that is available to you. In addition, there are several resources on and off campus to help. You can visit the Cougar Pantry in the Stern Center (2nd floor), a student-run food pantry that provides dry-goods and hygiene products at no charge to any student in need. Please also consider reaching out to Professor ABC if you are comfortable in doing so.

The College of Charleston offers many resources for LGBTQ+ students, faculty and staff along with their allies.

Preferred Name and Pronoun Information
On Campus Gender Inclusive facilities
Campus Resources
College of Charleston Reporting Portals
National Resources for Faculty & Staff
GSEC Reports
Documenting LGBTQ Life in the Lowcountry (CofC Addlestone Library Special Collections Project)
College of Charleston Quality Enhancement Plan (QEP)
Articles about CofC and LGBTQ+ Issues