BIOS 4500/ BIOL 8803: Drug Discovery
Course Syllabus

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Course Summary: In this course, you will learn about the entire drug discovery process by identifying a disease and disease target, designing a therapy to treat the disease which you will take from the early stage to preclinical testing and then though the entire FDA drug approval process. Of course, this will all be done in a virtual context as it is impractical to do in reality in the time constraints of this course.

BIOS 4500/ BIOL 8803 is a 3-credit course that meets on Monday, Wednesday and Friday with lectures / discussions from 11:00 - 11:50 AM in the Clough UG Learning Commons, Room 262.

Required text: Supplied reading list – peer reviewed journal articles. All articles can be found in the Files section in Canvas.

Office hours: By appointment. Please email or consult with the instructor during class to set up a meeting.

Evaluation:

Oral Drug Discovery Topic Presentation	**15%**
Oral Presentation of Selected Drug Target	**25%**
Oral Presentation of Results	**30%**
Research Paper	**30%**

Oral Drug Discovery Topic Presentation: Will consist of 15% of your grade. The presentation will consist of a PowerPoint presentation giving a synopsis of one of the required reading topics. You are expected to prepare a 10-minute presentation with 5-minutes for questions.

Oral Presentation of Selected Drug Target: Will consist of 25% of your grade. The presentation will consist of a PowerPoint presentation of what disease you are targeting and which molecular target you have selected. You are expected to prepare a 10-minute presentation with 5-minutes for questions.

Oral Presentation of the Results: Will consist of 30% of your grade. In this presentation, you will present the results from your computational analysis of your target protein, results from your representative small molecule library ligand screening and a justification of the top 5 molecules you have selected to move to animal screening and what time of animal model you have chosen to validate your molecules. You are expected to prepare a 20-minute presentation with 5-minutes for questions.

**All presentations will be timed and you will be held to the noted time limit for each presentation. The order of presentation will be assigned at random. The Topic and Target presentations will maintain the same order since they are presented close together. **

Research Paper: Will consist of 30% of your grade. You are expected to write up your results in a 5-page paper using the *Research Report* format of the Proceedings of the National Academy of Science (PNAS) https://www.pnas.org/page/authors/format. You should describe the protein target selected, the relationship of this target to the disease you wish to treat, describe your modeling procedure, virtual screening results and results from a literature analysis that justifies what drugs or drug therapies might work, what animal model, organoid system you selected to test the efficacy of your approach, how you would deal with drug safety, delivery and toxicology, and how you would conduct Phase I-III clinical trials. Your conclusion should describe what you have done, what are the limitations and what you would do next.

Academic Integrity
Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/.
Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Each student is expected to work separately on their drug discovery project as these are unique to each student in the class. Students are encouraged to collaborate about information regarding on-line resources and aspects of the general drug discovery process.

Accommodations for Students with Disabilities
If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Attendance and Participation
While your attendance in each class is strongly encouraged as essential material may be provided during the lectures of either the professor or the presentations of your classmates, it will not be required nor graded.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams
Class assignments for oral presentations are made well in advance of the presentation and you are expected to present at the assigned time. If for some reason, you cannot do so, please contact me in advance so that your presentation can be rescheduled. The paper describing your project is due on the last day of class at midnight, with no extensions given.

Student-Faculty Expectations Agreement
At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Collaboration & Group Work
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Student Use of Mobile Devices in the Classroom
Students are expected to refrain from using mobile devices in the classroom with the exception of using said devices to search for course related information.

Statement of Intent for Inclusivity

As a member of the Georgia Tech community, I am committed to creating a learning environment in which all of my students feel safe and included. Because we are individuals with varying needs, I am reliant on your feedback to achieve this goal. To that end, I invite you to enter into dialogue with me about the things I can stop, start, and continue doing to make my classroom an environment in which every student feels valued and can engage actively in our learning community.

Support Services and Resources
In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person.

Academic support
- Center for Academic Success http://success.gatech.edu
  o 1-to-1 tutoring http://success.gatech.edu/1-1-tutoring
  o Peer-Led Undergraduate Study (PLUS) http://success.gatech.edu/tutoring/plus
  o Academic coaching http://success.gatech.edu/coaching
- Residence Life's Learning Assistance Program https://housing.gatech.edu/learning-assistance-program
  o Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (http://omed.gatech.edu/programs/academic-support)
  o Group study sessions and tutoring programs
- Communication Center (http://www.communicationcenter.gatech.edu)
  o Individualized help with writing and multimedia projects

Personal Support
Georgia Tech Resources
- The Office of the Dean of Students: http://studentlife.gatech.edu/content/services; **404-894-6367**; Smithgall Student Services Building 2nd floor
  o You also may request assistance at https://gatech-advocate.symplicity.com/care_report/index.php/pid383662?
- Counseling Center: http://counseling.gatech.edu; **404-894-2575**; Smithgall Student Services Building 2nd floor
  o Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
  o *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at **404-894-2204**.*
- Students' Temporary Assistance and Resources (STAR): http://studentlife.gatech.edu/content/need-help
  o Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: https://health.gatech.edu; **404-894-1420**
  o Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- **OMED: Educational Services:** http://www.omed.gatech.edu
- **Women's Resource Center:**   http://www.womenscenter.gatech.edu; **404-385-0230**
- **LGBTQIA Resource Center:**   http://lgbtqia.gatech.edu/; **404-385-2679**
- **Veteran's Resource Center:**   http://veterans.gatech.edu/; **404-385-2067**
- **Georgia Tech Police: 404-894-2500**

National Resources
- The National Suicide Prevention Lifeline provides free and confidential support to those in suicidal crisis or emotional distress at 1-800-273-8255.
- The Trevor Project provides telephone (24 hours per day, 365 days per year) support to members of the LGBTQ+ community and their allies: https://www.thetrevorproject.org
  o Phone support: **1-866-488-7386**
  o Chat support (3-10pm ET, 7 days a week): http://www.thetrevorproject.org
  o Text support (3-10pm, Monday through Friday; text "Trevor" to **1-202-304-1200**)