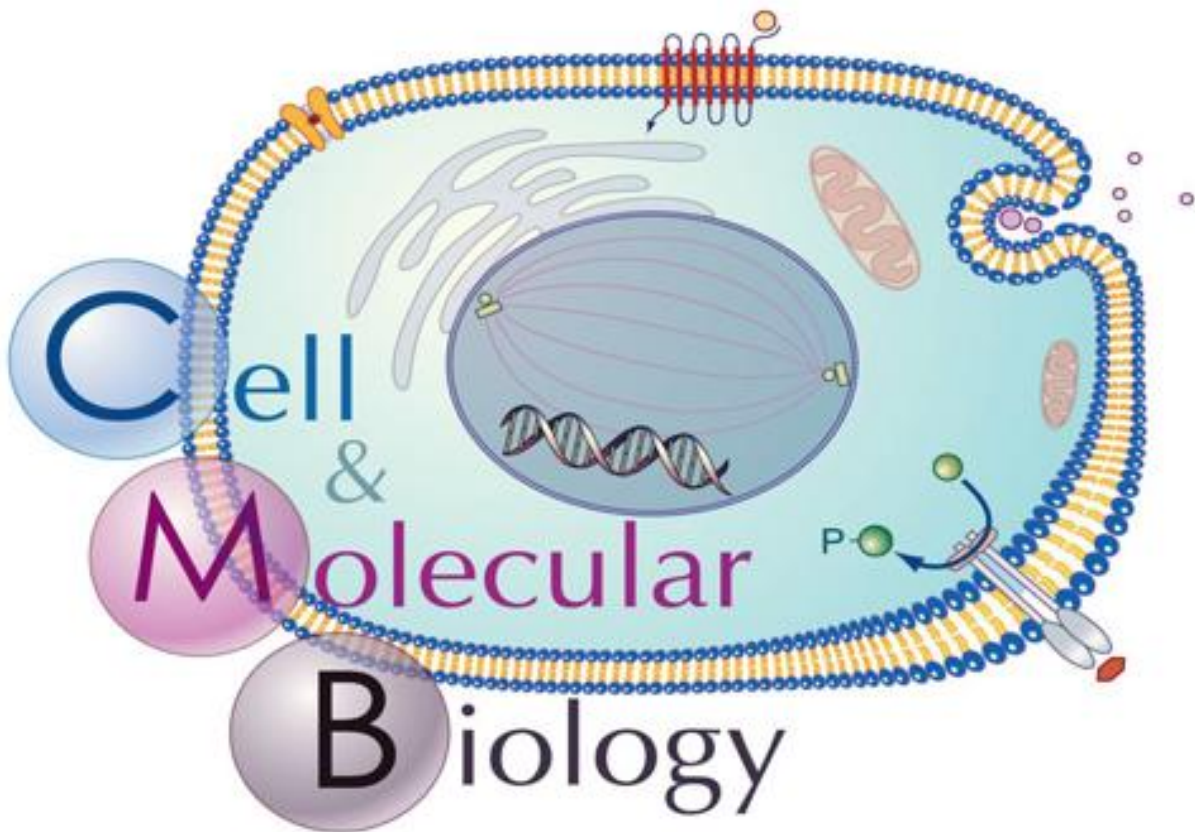


CELL & MOLECULAR BIOLOGY (CMB) TRACK

(Soon-to-be Cellular & Molecular Medicine Track)

STUDENT HANDBOOK (2013)

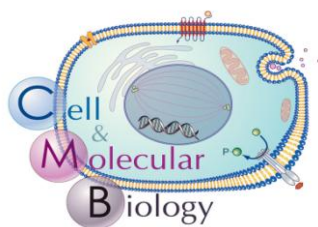


This handbook and other CMB track-related documents are available at:

<http://www.uthscsa.edu/csb/grad-trackcellmolecular.asp>

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Program Overview

The Cell and Molecular Biology (CMB) Track is the gateway to all basic, medical and translational research. This program is designed with maximum flexibility and it can be individually tailored to a specific student's interests including aging, cancer, immunology, neuroscience, metabolism and genetic disorders. The CMM track emphasizes the importance of molecular and cellular approaches to studying health and disease. It provides students with a broad foundation that can be utilized for future career development in more specialized areas of biomedical research and education. We encourage students to combine our advanced curriculum in Molecular and Cellular Biology with any of the advanced courses in the other IMGP tracks.

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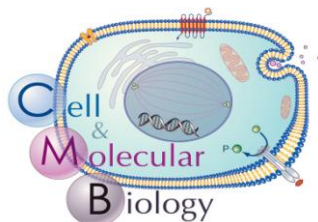
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Ph.D. Course Work

Fall: Year 1

Monday	Tuesday	Wednesday	Thursday	Friday
INTD 5000 Lectures 8:30-9:30, 9:45-10:45	INTD 5000 Lectures 8:30-9:30, 9:45-10:45	INTD 5000 Lectures 8:30-9:30, 9:45-10:45	INTD 5000 Small groups, 8:30-10:45	INTD 5000 Small groups, 8:30-10:45
Rotations	Cellular & Structural Biology Seminar, 11 – 12	Rotations	Cellular & Structural Biology Student Presentations, 11 – 12	Rotations
	Rotations		Rotations	

Rotations

4 rotations required (6 weeks each). Complete rotations by first week in April, second semester
Choose mentor, then track by end of second semester, first year.

Spring: Year 1

Monday	Tuesday	Wednesday	Thursday	Friday
	Advanced Molecular Biology (INTD 6007, 2 credits) and/or Advanced Cell Biology (INTD 6009, 2 credits) plus 2 credit hours of another advanced course if only one of the above.		Advanced Molecular Biology (INTD 6007, 2 credits) and/or Advanced Cell Biology (INTD 6009, 2 credits) plus 2 credit hours of another advanced course if only one of the above.	
	11 – 12 Cellular & Structural Biology Seminar		11 – 12 Student Presentations	
	Colloquium		Colloquium	

*Ethics course is included in this semester

Summer: Year 1

Research, Colloquium, Optional track course

Fall: Year 2

Monday	Tuesday	Wednesday	Thursday	Friday
Experimental design		Experimental design		Experimental design
Scientific writing	11 – 12 Seminar	Scientific writing	11 – 12 Student Presentations	

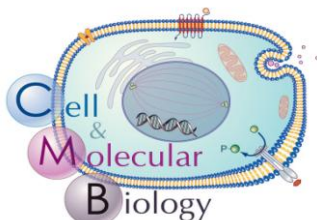
Optional track elective course

Spring: Year 2

Complete qualifying exam

Summer: Year 2

Present dissertation proposal and choose dissertation committee



CMB Track Curriculum Summary

1. CMB Track Curriculum: 72 credits are required to graduate.
2. Summary of Courses:
 - a. **Required Courses:** 23.5 total Credits
 - i. Fundamentals of Biomedical Sciences INTD5000: 8 Credits
 - ii. Laboratory Rotations INTD 5008: 4 Credits
 - iii. *Advanced Cell & Molecular Biology INTD 5007: *4 Credits
 - iv. *Advanced Cell Biology or Molecular Biology INTD 6007 or 6009 *2 Credits
 plus one Required Core Course from other IMGP track (see below) *2 Credits
 - v. Ethics in Research INTD 6002: 0.5 Credits
 - vi. Scientific Writing INTD 5077: 2 Credits
 - vii. Exp. Design/Data Analysis CSBL 5095: 2 Credits
 - viii. Colloquium CSBL 6089: 2 Credits
 - ix. Supervised Teaching CSBL 6071: 1 credit
 - b. **Elective Courses:** 6 credits
 - i. Selected by students based on their research interests. 43.5 credits
 - c. **Others:** 8 Credits
 - i. Seminar Course (two semesters/yr) CSBL 6090: 8 Credits
 - ii. Research CSBL 6097: 35.5 Credits
3. Qualifying Exam: Spring 2nd year
4. Dissertation Proposal Presentation CSBL 7099: Summer 2nd year
5. Annual Progress Seminar (Seminar course): Every spring semester starting in 3rd year

*CMB students can tailor the required coursework for our track to their specific interests including aging, cancer, immunology, neuroscience, metabolism and genetic disorders. They have two options to fulfill the 4-credit advanced course requirement:

Option 1: Take the full course (Advanced Cell & Molecular Biology, INTD 5007)

Option 2: Take only one of the advanced course modules, either Advanced Molecular Biology (INTD6007, 2 credits) or Advanced Cell Biology (INTD 6009, 2 credits), then add 2 credit hours of required core coursework from any of the other IMGP tracks (list provide below).

These changes provide CMB students with the greatest flexibility, while emphasizing the importance of molecular and cellular approaches to studying health and disease.

*Required Core Courses for Other IMGP Tracks:

Biology of Aging: Molecular and Cellular Homeostasis (CSBL6049, 2 credits)
 Biology of Aging: Systems Homeostasis and Aging (CSBL6050, 2 credits)
 Cancer Biology Core I (CSBL6068, 2 credits)
 Cancer Biology Core II (CSBL6069, 2 credits)
 Genetics (CSBL5035, 1 credit)
 Genomics (CSBL5024, 1 credit)
 Development (CSBL5023, 1 credit)
 Stem Cell Biology (CSBL5026, 1 credit)
 Core Concepts in Microbiology & Immunology (MICR5003, 4 credits)
 Macromolecular Structure & Mechanism (BIOC6036, 2 credits)
 Integration of Metabolic Pathways (BIOC6037, 2 credits)
 Mammalian Physiology: Excitable Membranes (PHYL5041, 1 credit)
 Mammalian Physiology: Cardiovascular Physiology (PHYL5042, 1 credit)
 Mammalian Physiology: Respiratory and Renal Physiology (PHYL5043, 1 credit)
 Mammalian Physiology: Endocrine/Metabolism & Gastrointestinal Physiology (PHYL5044, 1 credit)
 Fundamentals of Neuroscience (INTD5040, 2 credits)
 Principles of Pharmacology (PHAR5013, 3 credits)

ADVANCED CELL AND MOLECULAR BIOLOGY

INDT 5007, 4 credit hours

Course Director: LuZhe Sun

Module Directors:

P. Renee Yew (INTD 6009: Advanced Molecular Biology)

LuZhe Sun (INTD 6007: Advanced Cell Biology)

Course Description:

The Advanced Course for the Cell and Molecular Biology Track can be taken as a single 4 credit hours course. Alternatively, each of its two modules can be taken separately as two-credit courses either by CMB Track students or by students from any Track as an elective. The course provides a unique learning experience that prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. The Advanced Molecular Biology module focuses on: Chromatin structure, DNA Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation. The Advanced Cell Biology module focuses on: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, faculty will provide students with didactic lectures on a current research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

Goals of the course:

To learn how to read and critically evaluate the literature on a given topic, how to design the next hypothesis-driven experiment and to learn current experimental techniques.

Schedule:

Tuesday and Thursday 8:00 - 9:50 a.m.

Course Structure:

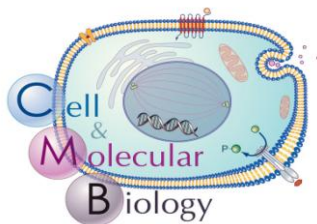
Lecture

Reading

Discussion

Evaluation/Grading:

Letter grading for the course will be based on class participation (30%), a take-home exam (30%) and written/oral presentations (40%) of proposed experiments for topics taught in the course.



ADVANCED MOLECULAR BIOLOGY

INTD 6009, 2 semester credit hours

Course Director: Renee Yew and Alexander Bishop

Course Description:

Advanced Molecular Biology is a 2 credit hour course that will provide an indepth learning experience on the fundamentals of molecular biology as well as prepare the student to evaluate and design new research in the cutting-edge areas of modern molecular biology. The course combines a didactic program of lectures along with a small-group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in molecular biology: Chromatin structure, DNA Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation. Each week, faculty will provide students with didactic lectures on a current research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

Goals of the course:

To gain an indepth knowledge of molecular biology, to learn how to read and critically evaluate the literature in a given area, how to design the next hypothesis-driven experiment and to learn current experimental techniques.

Schedule:

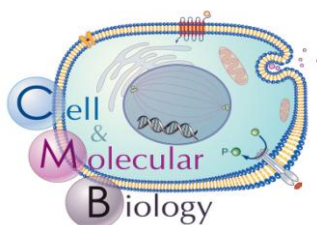
Tuesday and Thursday 8:00 - 9:50 a.m.

Course Structure:

Lecture
Reading
Discussion

Evaluation/Grading:

Letter grading for the course will be based on class participation (30%), a take-home exam (30%) and written/oral presentations (40%) of proposed experiments for topics taught in the course.



ADVANCED CELL BIOLOGY

INTD 6007, 2 semester credit hours

Course Director: LuZhe Sun

Course Description:

Advanced Cell Biology is a 2 credit hour course. The course provides an indepth learning experience that instructs students on the fundamentals of cell biology as well as prepare the student to evaluate and design new research in the cutting-edge areas of modern cell biology. The course combines a didactic program of lectures along with a small-group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in cell biology: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, faculty will provide students with didactic lectures on a current research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

Goals of the course:

To gain an indepth knowledge of cell biology, to learn how to read and critically evaluate the literature in a given area, how to design the next hypothesis-driven experiment and to learn current experimental techniques.

Schedule:

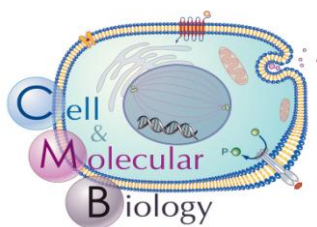
Tuesday and Thursday 8:00 - 9:50 a.m.

Course Structure:

Lecture
Reading
Discussion

Evaluation/Grading:

Letter grading for the course will be based on class participation (30%), a take-home exam (30%) and written/oral presentations (40%) of proposed experiments for topics taught in the course.



Mitochondria and Apoptosis

INTD 6008, 1 semester credit hour

Course Director: Yidong Bai

Course Description:

This course will focus in depth on Mitochondria and Apoptosis. Topics will include: Mitochondria and Respiration; Mitochondria and Reactive Oxygen Species; Mitochondria and Apoptosis. It will provide an opportunity for a unique learning experience where the student can prepare to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. Each week, faculty will provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

Goals of the course:

To learn how to read and critically evaluate the literature on a given topic, how to design the next hypothesis-driven experiment and to learn current experimental techniques.

New Schedule:

Fall, 2013, TBA

Course Structure:

Lecture
Reading
Discussion

Evaluation/Grading:

Letter grading for the course will NOT be based on a traditional examination but will be based on class participation and written/oral presentations of proposed experiments for topics taught in the course.

