

# GRADUATE PROGRAM IN CELLULAR AND MOLECULAR BIOLOGY

## COURSE SELECTION

### **CMB Course Requirements at a Glance:**

*(Discussed in Detail Below)*

1. Core Curriculum (9 Credits PIBS/3 Credits MSTP)
2. Electives (6 Credits)
3. Quantitative Training (2-3 Credits – can be “core” or “elective”)
4. Grant Writing (Pharm 502 Required in 2<sup>nd</sup>/G1 Year)
5. Ethics Training (RCR and R&R Required Every 4 Years)
6. CMB Courses (CMB 850 required every semester; CMB 630 required 4 times)

### **1. CORE CURRICULUM**

***CMB-PIBS students are required to take 3 credits of coursework in each of 3 areas (9 credits total):***

- a. Biochemistry
- b. Cell Biology
- c. Genetics

MSTP students receive 18 credit hours for medical school and required MSTP coursework. This includes training in biochemistry and cell biology that satisfies CMB requirements in these areas.

***CMB-MSTP students are required to take 3 credits of coursework in genetics.***

The specific courses elected to fulfill these requirements should be based on student’s prior educational background. See “Appendix 2” for specific courses based on the following proficiency levels:

- **Level 1.** No background/coursework in the basic area. An introductory class is recommended; in some cases, this may be an upper-level undergraduate course (400-500 level).
- **Level 2.** Some background in the basic coursework area, but not sufficient for Ph.D. training. A mid-level survey course is recommended (500 level – corresponding to PIBS “core” courses).
- **Level 3.** Graduate-level background has been achieved by the student, such as graduate-level courses or a Bachelor’s degree in the area. Courses based on primary literature are recommended.

Students should discuss previous coursework with advisors to determine the appropriate level for each basic area. It will be helpful to provide recent transcripts and syllabi of previous courses when requesting a more advanced level. Additionally, students should discuss with the mentor whether they should strengthen background in areas critical for their success in their chosen laboratory.

***Students are required to earn a grade of B or better in core course work, and maintain an overall average of B or better for coursework.***

### **2. ELECTIVES**

***CMB students are required to take 6 additional elective credits.***

It is recommended that the electives be selected to complement the student's research interests and needs. Course offerings change frequently, so students should check the [PIBS Curriculum Guide](#) for the most recent listings. View Appendix 3 for some sample plans based on different interest areas.

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## COURSE SELECTION (continued)

### 3. QUANTITATIVE TRAINING

*CMB students are required to take 2-3 credit hours of coursework that provides quantitative training.*

This requirement can be met by taking, either as an elective or as a CMB core course, in any one of the four general areas indicated in Appendix 2, or any other course approved by the CMB Director.

### 4. GRANT WRITING

*CMB students are required to take Pharmacology 502 (FA term/2 credits) in their 2<sup>nd</sup>/G1 year.*

### 5. ETHICS TRAINING

*Responsible Conduct of Research (RCR/PIBS 503) (1 credit) – Offered each year.* To be taken in PIBS in first year. Training is required at least every 4 years.

*Rigor & Reproducibility (R&R/PIBS 504) (1 credit – offered each year).* Training completion is required at least every 4 years.

*Refresher Workshops* – RCR and R&R workshops offered alternating summers.

### 6. CMB COURSES

*CMBIOL 850 (Student Seminar/1 credit) – required weekly starting in 2<sup>nd</sup>/G1 year until defense.*

*Students will be required to present a seminar in their 2<sup>nd</sup>/G1 year, and their 4<sup>th</sup>/G3 years. 2<sup>nd</sup> year CMB-PIBS and G1 CMB-MSTP students present a critical review of a report in the scientific literature; senior students present their own research.*

*3<sup>rd</sup>/G2-year students will serve as evaluators and facilitate seminars and rehearsals, alongside selected faculty evaluators.*

*More info about CMBIOL 850 in the next section (see “Course Guidelines”)*

*CMBIOL 630 (Short Course/Adv. Topics in Molecular Biology - 1 credit) – required at least 4 times*

Each Fall term, the “short course” is planned and facilitated by the student-run CMB Short Course Committee. Each Winter, the Genetics Training Program (GTP) students plan and facilitate the course. The course is a mini-series of seminars and discussions on a special topic of current interest to students, presented by leaders in the field, who are invited over several weeks.

*(see “Course Guidelines”)*