Introduction

Choosing a graduate program is one of the most important decisions you will make in your life. Then, why should you choose MOLECULAR AND CELL BIOLOGY PROGRAM? Because it is a SMART choice.

Support that encompasses both academic and living needs.
1. The supportive faculty strives to mentor young scientists and provide strong career foundations.
2. Supportive staff works to facilitate student interactions, and to make them feel at home at the institute and in Taipei. Finally, the MCB TIGP program provides competitive financial support, including low tuition fees and access to the medical care as well as grants to support students’ research, living, and conference travel costs.

Molecular biology training that is both comprehensive and integrative. Students in TIGP MCB program receive a solid foundation in every aspect of molecular biology and are given opportunities to apply their knowledge to a diverse array of research fields.

Accessible faculty who strive to train the next generation of scientists. Whether in the lab or in the classroom, TIGP-MCB program gives students access to nationally and internationally recognized professors at Academia Sinica and the National Defense Medical Center.

Resources encompassing everything from technical support in cutting-edge technologies and facilities to assistance with scientific writing and communication ensure that students receive comprehensive help in achieving their research and academic goals.

Taipei offers all the conveniences of a global, cosmopolitan city while remaining accessible, friendly, and one of the safest cities in the world.

The “SMART” training provided in the MCB program which is sponsored by the Institute of Molecular Biology (IMB), Academia Sinica in cooperation with the Institute of Life Sciences (ILS), National Defense Medical Center will help you build up your professional career.
Research Interests

The MCB program has about 40 faculty members; most have been trained in internationally highly regarded universities with extensive ties with global scholars. The research conducted by the faculty of MCB program covers a wide range of topics in basic research with great potential of applications.


Research Resource

In MCB program, high-quality research core facilities are equipped and feasible for each graduate student in the labs. Core facilities include transgenic mouse, transgenic fly, electron microscopy, confocal microscopy, X-ray crystallography, mass spectroscopy, microarray, electrophysiology, FACS and so on. Academia Sinica has an excellent Biological Sciences Library, with a large collection of books and research journals, as well as e-journals available on-line through the library. In addition, Public Service such as computer and printer facility, English Editor and Bioinformatics are used to support the in-campus research activities.

• Developmental Biology
• Neuroscience
• Infection and Immunobiology
• Chromosome Biology
• Structural Biology
• Systems Biology
• RNA Biology
• Plant Biology

Faculty Members

Academia Sinica Institute of Molecular Biology

Wen Chang
Ph.D., Microbiology and Immunology, University of Washington-Seattle, USA
Molecular mechanism of vaccinia virus entry into mammalian hosts
Cellular defense mechanisms and viral host range genes antagonizing host restriction

Yu-Chan Chao
Ph.D., Virology/Entomology, University of Arkansas, USA
Baculovirus gene regulation and protein engineering, pseudotyped influenza virus studies and applications

Hung-Ta Chen
Ph.D., Chemistry, University of Georgia, USA
Mechanisms of RNA polymerase II and III transcription

Jun-An Chen
Ph.D., the Wellcome Trust Gurdon Institute, Univ of Cambridge, UK
Non-coding RNA Function during Motor Neuron Development, Degeneration, and Regeneration

Liuh-Yow Chen
Ph.D., Biochemistry & Molecular Biology, Baylor College of Medicine, USA
Telomere Biology and Telomere Diseases

Sheng-hong Chen
Ph.D., Biological Sciences, University of California, San Diego, CA, USA
Lab for Cell Dynamics aims to quantify and model dynamics of signaling networks in single cells as the basis to control cellular behavior for therapeutic purposes

Pei-Lin Cheng
Ph.D., Biochemistry, National Yang-Ming University, Taiwan
Molecular mechanism of pre-mRNA splicing

Soo-Chen Cheng
Ph.D., Biochemistry, Duke University, USA
Molecular mechanism of pre-mRNA splicing

Cheng-Ting Chien
Ph.D., Biochemistry and Cell Biology, Stony Brook University, USA
Dendrite arborization in development and diseases
Synapse formation and plasticity

Hua-hu Chuang
Ph.D. in Biomedical Sciences, University of California, San Francisco, USA
Receptor and Channel Function

Kuo-Chiang Hsia
Ph.D., The Rockefeller University, USA
Molecular mechanism of protein-DNA and protein-protein interaction by X-ray crystallography

Chao-Deng Hsiao
Ph.D., Biological Crystallography, University of Pittsburgh, USA
Structural and functional study of protein-DNA and protein-protein interaction

Yen-Ping Hsueh
Ph.D., Molecular Genetics and Microbiology, Duke University, USA
Interaction between Nematodes and Nematode-trapping Fungi

Yi-Ping Hsueh
Ph.D., Microbiology and Immunology, National Yang-Ming University, Taiwan
Neuronal Morphogenesis
Neurodevelopmental disorders
Neurodegeneration

Chih-Yen King
Ph.D., Biophysics, Harvard University, USA
Molecular biology of amyloid and prion diseases
Structural principles of amyloids
Admission Requirement

The MCB Program admits students to the fall semester only. Students with backgrounds in biochemistry, biology, molecular biology, genetics, anatomy, chemistry, physics and related fields are welcome to apply.

Applicants holding a B.S. degree from an accredited institution, or who will obtain the degree within one semester, can apply for admission.

1. Certificate of degree
   Official records are defined as original documents issued by the institution that bear the actual signature of the Registrar and the seal of the issuing institution.

2. Transcripts
   A grade point average (GPA) of 3.0 or higher for all college work (4.0 = A) is preferred.

3. English Requirements
   Students from non-English-speaking countries are expected to read, write, comprehend, and speak English in order to be admitted for graduate study. Applicants whose first or native language is not English are required to take a test of English proficiency as part of the application procedure. Exemption from the English proficiency requirement is available for applicants graduated from universities where English is the primary language of instruction, if the applicants provide an official certification issued by the Office.

4. The Graduate Record Examination (GRE)
   We encourage the applicants to take the GRE’s General Test. Alternatively, the applicants should provide us with supplementary information (e.g. M.S. thesis, research publication, description of research experiences) that can demonstrate your potential in research. Your qualification will be reviewed by the Admissions Committee.

5. Two Letters of Recommendation

6. Statement of Purpose and Study Plan (less than 3 pages)

7. Other Evidence of Scholarly Achievements
   After reviewing all the supporting documents mentioned above, candidates passing the first screening will be invited for an interview. Local candidates will be asked to come to Taipei for interviews, whereas international students will be video interviewed.

Requirements for Ph.D. Degree

The Ph.D. in the MCB program requires successful completion of a minimum of 30-credit courses, a qualifying exam and thesis research.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular and Cell Biology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>Seminar</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Thesis Research</td>
<td>&gt; 10</td>
<td></td>
</tr>
<tr>
<td>Elective Courses</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Note: those with only a Bachelor’s degree are required to complete 42 credits

Courses

1. Required Courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular and Cell Biology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>Seminar</td>
<td>4</td>
<td>1st and 2nd year</td>
</tr>
<tr>
<td>Annual Progress Report</td>
<td>0</td>
<td>every fall semester, starting in the 2nd academic year</td>
</tr>
<tr>
<td>Thesis Research</td>
<td>12</td>
<td>Graduation</td>
</tr>
</tbody>
</table>

2. Elective Courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellular and Molecular Immunology*</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>Developmental Biology*</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>Experimental Approaches in Molecular and Cell Biology</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>Special Seminar in Chromosome Biology</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>Lab Rotation</td>
<td>2</td>
<td>1st year</td>
</tr>
<tr>
<td>Topics in Plant Science*</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>Virus and Cell Interactions*</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>RNA Biology</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>To be a Scientist: Perspectives and Essential Skills</td>
<td>3</td>
<td>Spring</td>
</tr>
</tbody>
</table>

* Courses are offered every other year. In addition, the MCB students may take any course offered by other programs in TIGP and by NDMC.

3. Chinese Language
   In order to help TIGP students’ daily lives’ communication with the local people, international students are required to take one year course of Mandarin Chinese.
Transferring Credits

New students who have transferred or re-entered from a Ph.D. program, and have previously completed graduate school coursework with a grade of 70 or higher at other domestic or international colleges or universities within five years of admission, can make a request to the Curriculum and Degree Committee to have those credits transferred if any of the following criteria is met:

1. The course has an identical title and content (transcript and course outline required).
2. For courses with a similar title and content, a course transcript, course outline, syllabus and titles of the prescribed textbook(s) need to be submitted to the Curriculum and Degree Committee and the corresponding TIGP-MCB program-associated course instructor for approval.

Requests for transferring credits should be submitted in the first week of the first semester after enrolling into the program. The maximum number of credits that can be transferred is 6 credits.

Qualifying Exam

TIGP-MCB Qualifying exam (QE) will be held twice every year. Students should take the QE before the start of the third academic year. Students who pass the Molecular and Cell Biology course are eligible to apply for taking QE.

Two formats for applicant proposals:
1. Non-thesis proposal: The topic cannot be closely related to the student’s Master’s or PhD thesis, or to the advisor’s research. However, the topic can be in the general field of the student’s thesis research.
2. Thesis proposal: With the consent of their thesis advisor, students can submit their thesis proposal for the examination.

Thesis Research

A minimum of two years of thesis research is required. Twelve credits will be granted to the student upon completion of their thesis defense. Students should choose a thesis advisor from among the eligible TIGP-MCB faculty after their enrollment.

Lab Rotation

Students may rotate through several labs with the goal of finding a lab in which to conduct their thesis research. The duration of each lab rotation is based upon mutual agreement between the student and the advisor, but shall not exceed four months. A maximum of 2 credits will be granted, even if students take more than two lab rotations. Students are highly recommended to decide on their thesis research lab by the end of the first summer. Studentships will be terminated if a student cannot find a thesis research lab before applying for the QE.

Thesis Advisor

The thesis advisor must be a faculty member of the TIGP-MCB program and have agreed to advise and sponsor the student for the entire period of graduate study.

Thesis Committee

The thesis advisor will organize a Thesis Committee within one month of a student choosing their lab. Each thesis Committee should consist of at least three members, including the advisor. The thesis Committee must meet at least once a year to evaluate the progress report from the student. The Thesis Committee evaluates the progress and advises on current research problems and the future direction of the project.

Progress Report

Students are required to complete their annual progress reports to the Thesis Committee in a timely manner in order to graduate. The first report should be given by the end of the third semester aimed at discussing the thesis proposal with the committee. Thereafter, progress reports should be given once a year by the end of each Fall semester. Students should prepare a written proposal or progress report (see below for format), and submit it to their Thesis Committee and the TIGP-MCB office at least one week before their scheduled annual progress report meeting.

Graduation

Degree Requirements

In order to earn a Ph.D. under the TIGP-MCB program, a candidate must successfully complete/meet the following criteria within seven years:

• Completion of course requirement: 30 credits of course work (including 12 credits for thesis research) are required for students with a Master’s degree and 42 credits for students with only a Bachelor’s degree.
• Publication: The student should have published at least one manuscript, or have a manuscript accepted for publication, as first-author1 in a research journal that is ranked in the top 50% of journals in that subject amongst SCI list publications. The affiliation for TIGP-MCB program students should be listed in their published work as “Molecular and Cell Biology, Taiwan International Graduate Program, Academia Sinica and Graduate Institute of Life Science, National Defense Medical Center, Taipei, Taiwan”, followed by the primary affiliation of the advisor. An alternative option is “Molecular and Cell Biology, Taiwan International Graduate Program, Academia Sinica and Graduate Institute of Life Science, National Defense Medical Center, Taipei, Taiwan”. The publication date of the manuscript can be any time after the student has been enrolled in the TIGP-MCB program.
• The thesis must be written in English.
• Students must have completed annual progress reports in a timely manner.
• Students must have the consent of their Thesis Committee to proceed with the thesis defense.
• Students must pass the thesis defense.
Thesis Defense Committee
With the consent of the student’s Thesis Committee, a Thesis Defense Committee of 5-7 members must be formed. The Thesis Defense Committee must comprise 2-4 non-MCB faculty members. Students must present their thesis work in an open seminar, followed by a defense in front of the Thesis Defense Committee.

1 If there is more than one first-author in the publication, the student’s Thesis Committee is required to verify that the quality and quantity of the student’s work is sufficient to gain a Ph.D. degree under the TIGP-MCB program.

TIGP-MCB evaluation procedure for co-first author papers or publications with special circumstances:
Step 1: The student should make a progress report available to all Thesis Committee members and submit it to the TIGP-MCB program office.
Step 2: An evaluation will be conducted by the TIGP-MCB program office and the program office will send its evaluation to the individual Thesis Committee members.
Step 3: The MCB’s Curriculum and Degree Committee (CDC) will review the publication and will send its reviews to the relevant committee of any Partner University for a majority vote.
Step 4: Upon the evaluation and approval by the CDC and Partner University committees, the application will then be submitted to the National Defense Medical Center-Institute of Life Sciences (NDMC-ILS) Board of Education; the presence of at least half of the Board’s members is required for discussion of applications to proceed. Approval will be deemed granted if a two-thirds majority of the Board members present vote in favor of the evaluation.

Degree Conferral Policy
Based on the Regulations of the Ministry of Education in Taiwan, students will officially register with our partner universities. Upon completion of the program, each student will be conferred a Ph.D. degree by the partner university and a certificate jointly signed by the President of Academia Sinica and the Director of TIGP.

Fellowship and Stipend
The 1st year:
Each student will receive a monthly stipend of NT$34,000 (around US$ 1,060) from TIGP.

The 2nd and 3rd years:
Student fellowships will be renewed after successful fulfillment of the fellowship requirements:
1. Satisfactory academic performance, including completion of all required courses.
2. An agreement with a MCB faculty to serve as the student’s thesis advisor.
3. Completion of the qualifying exam.

The 4th year and after:
The thesis advisor is responsible for the student fellowship. The amount of fellowship may vary depending on the advisor’s funding situation and the student’s academic performance.

Tuition and Medical Insurance
The structure of tuition fee is consisted of basic fee at around NT$ 12,000 and credit fees according to the credits you take per semester upon registration. Each credit fee will cost approximately NT$ 1,350. Six months after receiving their Alien Residence Certificate, students are qualified to join the National Health Insurance Program. Students are expected to pay the same premium as all the Taiwan citizens and will be entitled to the same medical coverage.

Living and Housing Costs
Housing options include on-campus and off-campus. On-campus self-catering student dormitory with single study bedrooms is available to TIGP students at reasonable costs (for details please visit our website at http://tigp.sinica.edu.tw/Accommodation.html). Off-campus private housing is generally more expensive with rents range from NT$ 5,000 - 15,000 per month. Program will provide assistance to students who wish to seek for off-campus housing. Meals are available on campus at the Activity Center Cafeteria and near-by restaurants at affordable cost.