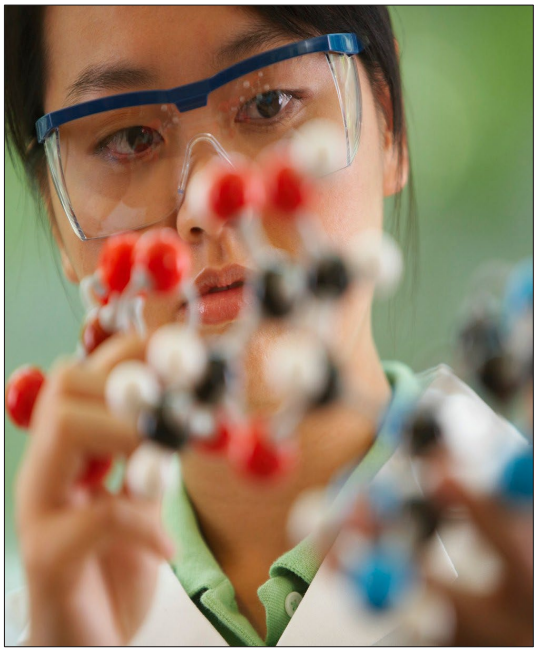


Clinical Genetic Molecular Biology Scientist

Sponsored by

California State University, Los Angeles

The program is post-baccalaureate training that prepares graduates for positions as Clinical Genetic Molecular Biologist Scientists (CGMBS). A licensed CGMBS performs specialized molecular biology diagnostic tests in hospital clinical laboratories, in commercial reference laboratories, or in research and development for biotech companies. The 52 week long program is approved by the California Department of Public Health, Laboratory Field Services.

The Cal State LA Clinical Genetic Molecular Biologist Scientist Training Program consists of two components, a didactic component and a clinical practical training component. The lecture courses required for this program are offered through the College of Professional and Global Education in Special Sessions to students accepted into the program.

The mission of the program is to prepare laboratory professionals with the technical, critical thinking, and management skills that will allow them to function at the highest level in the clinical laboratory, assume leadership roles in their working environment, and become leaders in their profession. In addition, we strive to instill in our trainees a love of continuous learning in and beyond their discipline.

CAL STATE LA
COLLEGE OF
PROFESSIONAL & GLOBAL EDUCATION
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Prerequisites for Admission to the Program

- ☐ A bachelor's degree in biology, received prior to admission to the program.
- ☐ A minimum of 10 semester units (15 quarter units) of chemistry that must include an upper division class in biochemistry.
- ☐ 18 semester units (27 quarter units) of biological sciences that must include 3 semester (4 quarter) units in genetics and 3 semester (4 quarter) units in molecular or cell biology. The remaining 12 semester (19 quarter) units must be in advanced genetics or upper division cell biology, molecular biology or microbiology. At least two of these classes must have laboratory components that include molecular techniques.
- ☐ 3 semester units (4 quarter units) of college level statistics.
- ☐ A minimum GPA of 2.75 on a 4-point scale. International students must have their transcripts evaluated by the IERF credential evaluation service and their grades must be converted to a 4-point scale (course by course evaluation).
- ☐ Genetics and Molecular or Cell Biology courses must have been completed within the last seven years.
- ☐ For candidates with foreign degrees whose language of instruction was not English, a minimum of 90 IBT, 7 IELTS, or DuoLingo score of 105 or higher, or PTE score of 53 or higher is required. IN ADDITION, an upper division course in Genetics, Molecular Biology or Cell Biology taken in the USA with a grade of B or better IS REQUIRED.
- ☐ Three (3) recommendation forms from upper division/graduate course instructors or work supervisors, with at least one from an instructor.
- ☐ Pending application to Laboratory Field Services (https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/CLS-Trainee.aspx) for a Clinical Genetic Molecular Biologist Scientist Trainee License. Final acceptance for admission to the program is contingent upon receiving this license.
- ☐ A signed Statement of General Health form from the student's primary healthcare provider.
- ☐ Candidates must have U.S. citizenship or permanent residency in the U.S. to be admitted to the program.

Successful completion of the program leads to a certificate and makes the graduate eligible to take the ASCP Molecular Biology Scientist board exam to become State licensed and enter into a career in laboratory science. During the program year students spend four days per week at the clinical site laboratory and one day per week in didactic instruction. Students are enrolled in graduate level classes that are transferrable to appropriate graduate programs; see list below.

Required Courses (12 units):

BIOL 5500A	Advanced Studies in Molecular Diagnostics A	(6 units)
BIOL 5500B	Advanced Studies in Molecular Diagnostics B	(6 units)

These courses will be offered over two 15-week terms with BIOL 5500A and B, offered as outlined below.

CGMBS Didactic Curriculum

	First Term BIOL 5500A	Second Term BIOL 5500B
Week	Topic	Topic
1	Nucleic Acid Biochemistry	DNA-based Tissue Typing I
2	Isolation, Resolution, and Detection of Nucleic Acids	DNA-based Tissue Typing II
3	Central Dogma of Molecular Biology	Concepts in Molecular Oncology I
4	Analysis and Characterization of Nucleic Acids	Concepts in Molecular Oncology II
5	Nucleic Acid Amplification	Concepts on Molecular Oncology III
6	DNA Sequencing	Solid Tumors I
7	Fundamentals of Cell Biology and Human Genetics	Solid Tumors II
8	Human Genetics, continued	Liquid Tumors I
9	DNA Polymorphisms, Human Identification, and Human Disease	Liquid Tumors II
10	Chromosomal Structure and Chromosomal Mutations	QA/QC and CA Regulations in the Clinical Lab
11	Gene Mutations and Detection	Hemoglobinopathies and Thalassemias
12	Detection of Inherited Diseases: Triplet Repeat Diseases	Coagulopathies and Thrombophilias
13	Detection of Inherited Diseases: Disorders of Development/Differentiation	Molecular Detection and Identification of Viral Infections
14	Detection of Inherited Diseases: Metabolic Disorders	Molecular Detection and Identification of Bacterial Infections
15	Review for Final and Licensing Exam	Review for Final and Licensing Exam
16	Final Examination	Final Examination

Current Clinical Sites

City of Hope Clinical Molecular Diagnostics Laboratory, City of Hope (Duarte)

Fulgent Diagnostics (Temple City)

Genomic Testing Cooperative (Lake Forest)

Illumina, Inc. (San Diego and Foster City)

Kaiser Permanente Southern California Medical Genetics Laboratories (Los Angeles)

PacGenomics (Agoura Hills)

Sterling Pathology (Seal Beach)

USC Clinical Laboratories, Molecular Pathology (Los Angeles)

Students train in close association with the staff at the various clinical sites, with actual patient samples and learn procedures at the clinical site. This provides each student with excellent preparation for careers upon graduation.

Clinical Rotations	
Isolation of DNA/RNA	8-16 weeks
Hybridization/Sequencing	4-8 weeks
PCR methods	8-16 weeks
Performance of specific molecular tests	8-14 weeks
Review	2-4 weeks
TOTAL	52 weeks

The total length of the program must be 52 weeks (minimum) but can be longer.

Student progress is monitored throughout the year by the on-site education coordinators through direct observation and written, practical and oral examinations. Evaluations of student progress are reviewed with the student during and following completion of the various laboratory sections. In addition, students are asked to evaluate the general program, individual sections and the didactic part of the curriculum. This feedback is used for program improvement.

Written objectives and required performance standards are distributed to the students during orientation to the program. Students must maintain minimum performance standards of 70% (based on a straight grading scale) on all examinations and evaluations to continue in the program. However, this is the accepted minimum and students are strongly encouraged to perform at their highest level. Failure to maintain at least minimum scores will lead to dismissal. Evaluation forms, evaluation and dismissal policies and the appeals and grievance procedure are detailed at orientation.

Application and Admission Procedure

Admission is by application only. Follow the link to the program website for fillable forms and instructions.
http://www.calstatela.edu/page/clinical-genetic-molecular-biologist-scientist-certificate

A minimum GPA of 2.75 is required. Transcripts from all schools attended must be provided along with 3 recommendation forms (see forms on website); we prefer one of the recommendations be from university professors. A resume and a one or two page letter of interest in CGMBS must accompany other application materials.

The admissions committee, comprised of the program director, program education coordinator, reviews all eligible applicants without regard to race, color, religion, national origin, sex, age or handicap. Top applicants are contacted for a scheduled interview by the group of educators comprising the selection committee. A standardized set of questions is asked of all candidates and ample time is provided for the applicants to ask any questions that they may have.

Student applications are accepted from October 1st until January15 of the year the internship begins. Selected students are offered interviews in late April. The students are asked to rank order their clinical site preferences, and clinical sites are asked to rank in order the interviewed candidates. The two lists are reconciled and offers of positions in the program at a specific training site are sent to accepted students shortly after the interview process. Students offered positions must confirm acceptance via email. Training starts the following August.

Students must be physically capable of completing all aspects of the training program. Accepted students must have the ability to perform various physical, technical, and occupational skills involving vision, mobility, fine-motor skills and have the ability to communicate effectively in English.

Costs, Student Loans, Work Hours, Other Topics

Currently, costs are $675 per unit ($8,100 total) with additional expenses required for liability insurance and proof/provision of health insurance, various immunizations (Hepatitis B, measles, mumps, Tdap, COVID-19 vaccination and proof of TB skin testing/clearance).

Students are required to purchase textbooks for personal use (no more than $450).

Participation in the Federal Guaranteed Student Loan program is available; a FAFSA application must be filed by interested students.

Students provide their own housing; accommodations are readily available in the surrounding communities. Meals during the training day may be available in hospital cafeterias or students may bring meals from home.

Job related illnesses can be treated in an emergency room for a fee. Any absences must be made up at the end of the training year.

Students are provided with protective garments at each clinical site. Appropriate, neat, street attire with closed-toe shoes are required in the laboratories.

Because the time commitment required for successful training is great, students must strongly consider how their non-programmatic obligations may impact their participation.

Training hours vary from section to section depending on the laboratory. Typical workdays begin at 7:00 or 7:30 a.m. and end at 3:30 or 4:00 p.m. Students are not required to train weekends or hospital holidays.

For more information contact:

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