Thank you for your interest in the Graduate School of Biomedical Sciences at Baylor College of Medicine. Baylor College of Medicine is a health sciences university known for excellence and innovation in education, research and patient care. Our location in the Texas Medical Center, the largest medical complex in the world, and in Houston, the most diverse, large, metropolitan city in the United States, makes for an exciting environment in which to live and learn.

Our goal is to train the next generation of leaders in the biomedical sciences, and we know that success is individualized for each trainee. You will see throughout this view book the many different areas of research, our outstanding Advanced Technology Cores, as well as the support of our Student Success Resources. We prepare our students to be life-long learners ready for a variety of career options including academics, business, pharma and biotech and more.

This view book will introduce you to our interdisciplinary graduate programs, collaborative and unparalleled research resources and of course, our wonderful faculty and students. Despite the COVID-19 pandemic, significant advancements in research and training continue, and students are making exciting discoveries. We hope you like what you see, and that your future plans will include the Graduate School of Biomedical Sciences at Baylor College of Medicine.

Dr. Carolyn Smith
Dean
Graduate School of Biomedical Sciences
Baylor College of Medicine

“My thesis advisor told me when I graduated, ‘You have learned about a specific process, but more importantly you have learned how to learn.’ That has served me enormously throughout my career in that I know I can take a technical article in any discipline and read it and understand it.”

OLGA CABELLO HENRY, PH.D.
ALUMNA
ENVIRONMENT, SCIENCE, TECHNOLOGY, AND HEALTH ADVISOR FOR THE WESTERN HEMISPHERE
U.S. DEPARTMENT OF STATE
Many students begin a Ph.D. program envisioning a lifetime spent in an academic lab. For a growing number of Ph.D. graduates, career ambitions lie along alternative pathways in biotech, business, pharmaceutical industry, consulting, law, and more.

Wherever your ambition leads, we will help you reach your goal. You will be following a path well worn by BCM alumni who have built successful careers across diverse endeavors.

“BCM opened up my world to what is possible in terms of everything I wanted to do scientifically and academically. If you find a job you love, you never have to work a day in your life.”

WARREN ZIMMER, PH.D.
ALUMNUS
PROFESSOR OF GENETICS AND TOXICOLOGY
TEXAS A&M UNIVERSITY

*These data are for graduates from July 1, 2020, to June 30, 2021.

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**Choose Your Path**

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**Students**

- **587** number of students
  - **381** domestic
    (After the state of Texas, the largest groups are from California and New York)
  - **206** international
    (After the U.S., the largest groups are from China, India, and Taiwan)
  - **263** male
  - **324** female
  - **— 114 —** underrepresented in sciences

**Facts**

- **>$550M** total research funding
- **20th** rank in NIH funding to medical schools
- **9** top 25 departments in NIH funding
- **>1 million** square feet of basic science and computational research space on main campus
- **250,000** square feet of additional basic and clinical research space throughout Texas Medical Center occupied by BCM faculty and staff
- **13** members of the National Academy of Medicine
- **8** members of the National Academy of Sciences
- **7** members of the National Academy of Inventors
- **3** Howard Hughes Medical Institute Investigators

**Average time to degree**

- **5.9** years

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**Job Placement/Advanced Training for 2020/2021 Graduates**

- **50%** postdoctoral fellowships
- **20%** pharma, biotech
- **12%** business
- **10%** research-academic
- **6%** medical school and/or clinical training
- **1%** science writing
- **1%** academics faculty
If there is something you are interested in that has anything to do with biomedical sciences, there is someone here who does it or knows somebody who does. There are an astounding number of labs here, which offers a lot of opportunity for collaboration.

RACHEL CURRY
STUDENT

A hundred years of achievement in biomedical research, exceptional scientists and trainees, and a resource-rich research enterprise create an exceptional environment for basic, clinical, and translational research. Examples of findings include:

- Human breast epithelial cells are organized as a cobblestone layer revealed here by e-cadherin (epithelial-cadherin, green), a cell-adhesion protein located on the cell surface. Cell nuclei are highlighted in blue. Carcinoma arises from breast epithelial cells that acquire genetic alterations leading to cancerous behavior, including metastasis. The image is from the laboratory of Dr. Chonghui Cheng and was in a paper published in Nature Communications.

- This image shows the three vascular layers of the retina that are important for normal visual function. The image is part of a study led by Dr. Melanie Samuel that discovered novel genes involved in the organization of vascular layers in the mouse retina. The Samuel lab combines nanoscopic imaging tools and techniques for circuit analysis, novel genetic animal models, and computational approaches to circuit mapping to discover the mechanisms, genes, and molecules involved in regulating nervous system networks. The study was published in Cell Reports.

- The fruit fly is a valuable animal model to unravel the genetic causes of both rare and more common human diseases. Dr. Hugo Bellen and his colleagues investigate the mechanisms involved in neural development and function in the fruit fly, Drosophila melanogaster. In many instances their approach includes developing new technologies to manipulate genes and creating the reagents to implement these techniques for most fruit fly genes. This image of a fruit fly embryo from one of the laboratory’s publications in The American Journal of Human Genetics shows the location of Schizo, a protein involved in neural development.

SHELTON BOYD
STUDENT

TOGETHER, THE INSTITUTIONS OF THE TMC ARE SECOND IN THE NATION IN FUNDING FROM THE NATIONAL INSTITUTES OF HEALTH.
As a student of the BCM Graduate School of Biomedical Sciences, you will leverage the resources from one of the nation’s preeminent research institutions in the world’s largest medical complex.

Advanced technology core laboratories provide state-of-the-art instrumentation and technologies, as well as consultation on experimental design, data analysis, and training. Through the cores, students not only gain access to tools and techniques that support cutting-edge research, they also receive training and mentorship.

Exceptional facilities available at BCM include:

- Antibody-Based Proteomics
- Bioengineering
- Biostatics & Informatics
- Cell-Based Assay Screening
- Core for Advanced MRI Imaging
- Cytometry & Cell Sorting
- Gene Vector
- Genetically Engineered Rodent Models
- Genomic & RNA Profiling
- Human Stem Cell
- Human Tissue Acquisition & Pathology
- Integrated Microscopy
- Macromolecular X-Ray Crystallography
- Mass Spectrometry Proteomics
- Metabolomics
- MHC Tetramer
- Mouse Metabolic and Phenotyping
- MS Proteomics
- NMR and Drug Metabolism
- Optical Imaging & Vital Microscopy
- Patient Derived Xenograft & Advanced In Vivo Models
- Population Biosciences Biorepository
- Protein & Monoclonal Antibody Production
- RNA In Situ Hybridization
- Single Cell Genomics
- Small Animal MRI
- Alkek Center for Metagenomics and Microbiome Research
- Cardiovascular Research Institute
- Center for Alzheimer’s and Neurodegenerative Diseases
- Center for Cell and Gene Therapy
- Center for Drug Discovery
- Center for Precision Environmental Health
- Dan L. Duncan Comprehensive Cancer Center
- Dan L. Duncan Institute for Clinical and Translational Research
- Huffington Center on Aging
- Human Genome Sequencing Center
- Stem Cells and Regenerative Medicine Center
- Therapeutic Innovation Center

FOR MORE INFORMATION ON RESEARCH RESOURCES VISIT bcm.edu/research

COLLABORATIVE RESEARCH CENTERS
Collaborative research centers create dynamic communities where faculty and students engage across traditional scientific divides. Center-organized seminars and workshops are open to all graduate students.

BCM research centers include:

- Alkek Center for Metagenomics and Microbiome Research
- Cardiovascular Research Institute
- Center for Alzheimer’s and Neurodegenerative Diseases
- Center for Cell and Gene Therapy
- Center for Drug Discovery
- Center for Precision Environmental Health
- Dan L. Duncan Comprehensive Cancer Center
- Dan L. Duncan Institute for Clinical and Translational Research
- Huffington Center on Aging
- Human Genome Sequencing Center
- Stem Cells and Regenerative Medicine Center
- Therapeutic Innovation Center

DATA ACCESS
As the home of one of the world’s premier human genome sequencing centers and co-owner of Baylor Genetics, BCM has access to high-quality genetic data. Through the College’s involvement in the Human Microbiome Project, National Institutes of Health Brain Initiative, and other major national and international collaborations, BCM researchers have access to extensive data repositories.

The College’s partnership with CommonSpirit Health, which has more than 700 care sites in 21 states, collaboration with Baylor Scott & White, the largest not-for-profit healthcare system in Texas, and affiliations with large healthcare providers in the Texas Medical Center, provide our researchers access to clinical data warehouses.

“When I was interviewing here, people highlighted the cores and the clinics, but it didn’t mean anything to me at the time. Now I see how the cores and collaborations with clinicians have pushed my research forward in what feels like a really short time.”

ELIZABETH BOWLING
STUDENT

“Whatever you think you might need to get involved in or have in order to advance your experience as a Ph.D. student, you can find it here.”

BRITTANY BARRETO, PH.D.
ALUMNA
FOUNDER & EXECUTIVE DIRECTOR OF FEMTCH FOCUS
FLEXIBILITY TO MEET YOUR GOALS

Enrolling in the BCM Graduate School of Biomedical Sciences opens doors to educational opportunities both within the College and with other outstanding institutions. We encourage students to customize their training to fit their individual career goals. You may choose to gain teaching experience, complete internships, work with young students, take courses at neighboring institutions, or take advantage of other opportunities at the College.

CROSS-CUTTING CURRICULUM

While it remains critical for Ph.D. students to gain deep knowledge of their specific field of specialization, this is no longer sufficient. The graduate school redefined the curriculum so that students gain knowledge and skills in a variety of areas, including human subjects research, ethics, rigor, leadership, mentoring, time management, and teamwork.

INDIVIDUAL DEVELOPMENT PLAN

Every graduate student has an Individual Development Plan (IDP). The IDP enables each of our trainees to identify professional goals that match their interests and values for the purpose of developing appropriate career-specific skills. The creation and regular review of the IDP encourages discussions between students and mentors about career goals early in the training process and implements a course of action to achieve these goals.

TIERED CURRICULUM

Our three-tiered curriculum is designed to ensure that all students have the strong foundational knowledge and quantitative skills essential for all biomedical scientists, while providing the opportunity to dive deep into their chosen fields. During the first two terms of the year, students in most programs participate in a rigorous pair of foundations courses that provide all students, regardless of specialty, a breadth of knowledge across the biological sciences. Beyond the foundations, each of our Ph.D. programs has a core of required courses to provide students with an in-depth understanding of their field. The third tier of our cross-cutting curriculum allows students to select elective coursework that supports their interests. In year two, students continue with coursework focused on building the knowledge and skills required for their area of focus.

“I chose BCM because of the strong emphasis on cutting-edge approaches to research. It was a perfect fit for my research interests and educational aims.”

JAIME REYES
STUDENT

“During my application process, one of my main priorities was to find a school that truly appreciates and supports its graduate students. Even from my very first interaction with Baylor personnel, I could see these qualities in the GSBS program. I never doubted that Baylor could give me excellent training and that I’d be able to work in a lab that fit my interests, but the support and camaraderie of the GSBS faculty and staff was truly the deciding factor for me.”

LARISSA NEVES
STUDENT

STUDENTS HAVE MANY OPPORTUNITIES TO PRESENT THEIR WORK AT ON-CAMPUS EVENTS AS WELL AS AT LOCAL, NATIONAL, AND INTERNATIONAL SCIENTIFIC MEETINGS.
THE CITY OF HOUSTON: A GREAT PLACE TO LIVE, LEARN, WORK, PLAY AND RAISE A FAMILY

ACTIVITIES AND ATTRACTIONS

• Professional, collegiate, and recreational sports leagues
• Theater, ballet, concerts, opera, and museums
• Nightlife options around town
• Shopping galore
• 350 parks; 95 miles of nature, hiking, and bike trails; and three state parks nearby
• More than 10,000 restaurants representing 70 countries and U.S. regions
• Water recreation within a short drive (Galveston beaches, Clear Lake, Lake Conroe, and Lake Livingston)

HOUSTON FACTS & FIGURES

1st
• Among nation’s 10 most populous cities in total acreage of park land

2nd
• Largest concentration of Fortune 500 companies in the U.S.

4th
• Largest city in U.S.: 2.3 million residents

23%
• Below the average cost of living in the 20 most populous U.S. cities

60
• Degree granting colleges, universities, and technical schools

145
• Languages spoken

500
• Institutions devoted to performing and visual arts, history, and science

LOCATION, LOCATION, LOCATION

When selecting where to pursue your doctoral degree, you are choosing your professional and personal home for the next several years. As with any home, location is the key. Baylor College of Medicine’s location is ideal for anyone wishing to pursue a career in biomedical sciences while maintaining a high quality of life.

A LEADING HEALTH SCIENCES UNIVERSITY

BCM is home to researchers, clinicians, and educators dedicated to improving lives for individuals and communities locally and globally. The healthcare, education, and research programs of BCM consistently rank among the best in the nation. The College’s students and faculty receive prestigious awards and honors for their contributions.

BCM fosters diversity among its students, trainees, faculty, and staff. In the AAMC Diversity Engagement Survey, BCM’s community ranked in the top third among institutions for having an inclusive environment.

“My mom told me I need to work for the tourist office of Houston because I try to convince everyone to move here. I couldn’t imagine going back to live somewhere without the diversity of cultures, restaurants, events, and activities. Other cities may offer as much to do as Houston, but the low cost of living here means that you can actually take advantage of everything the city has to offer as a graduate student.”

KRYSTYN HOFFMAN, PH.D.
ALUMNA

THE WORLD’S LARGEST MEDICAL COMPLEX

Along with BCM, many of the top-ranked research and clinical institutions in the nation are members of the Texas Medical Center, including:

• Baylor St. Luke’s Medical Center
• Harris Health System
• MD Anderson Cancer Center (the world’s largest cancer hospital)
• Rice University
• Texas Children’s Hospital (the world’s largest children’s hospital)

The exceptional size and scope of the TMC biomedical research community creates unique opportunities to leverage resources as well as the talents and experience of faculty, staff and students. The culture and environment of a large medical center provide students with opportunities to obtain education and practical experience in both basic and applied research.

WANDERSON REZENDE
STUDENT

“I went from Brazil to Washington, D.C., and from Washington to Texas. Because of the Southern hospitality, the way people treat you, how open things are, and how diverse Houston is, it was a fairly easy transition. I love this place!”

TMC FACTS

50 million
8th
• Developed square feet

10 million
10th
• Largest business district in the U.S.

180,000+
• Patient visits per year

$3 billion
• Surgeries annually

106,000+
• In construction projects in progress

EMPLOYEES
STUDENT SUCCESS RESOURCES

Student resources at BCM are designed to help you successfully navigate through your education and into the workforce.

ACADEMIC EXCELLENCE
If you need help with a specific course, accommodations for a disability, veteran’s affairs services, counseling, or assistance finding resources in the Texas Medical Center Library, a wide-range of services are available to you at BCM.

For a full listing of Student Success Resources visit bcm.edu/student-services

NETWORKING & STUDENT ENGAGEMENT
Your opportunities to build your support and networking communities begin as soon as you arrive on campus for orientation. Throughout your years at BCM, you will have many opportunities to participate in and lead organizations and committees within the graduate school and the College. Diverse student-led organizations facilitate networking and building social connections with students who share your interests.

For a full listing of Student Wellness services, visit bcm.edu/student-wellness

HEALTH & WELLNESS
Taking care of yourself is a prerequisite for success in school and beyond. At BCM you will have many options to participate in individualized or group wellness programs, activities and events run by the graduate school, the College, and the Texas Medical Center as well as organizations throughout Houston.

Learn more at bcm.edu/careerdevelopment

“BCM really focuses on meeting your needs that are not specific to the lab or the classroom. There are a lot of opportunities for social outreach, volunteering and engagement in student groups.”
ANDREW LOPEZ
ALUMNUS

“My lab mates are Chinese, Indonesian and Mexican-American and I’m from the Philippines. Everyone’s opinions are valued. It doesn’t matter where you come from or where you are now, all that matters is what you can bring to the table.”
CARLO CRISTOBAL
STUDENT
STIPENDS AND BENEFITS

At BCM we are focused on you and your training. If your vision for your future includes teaching, you may choose to gain experience as a teaching assistant for graduate courses or through other opportunities available to our students. Teaching is not required in order to receive a stipend and other benefits. You have the freedom to focus exclusively on your education and research as well as work with your mentors to take advantage of other BCM resources that match your career interests.

Students receive:
- $34,500 stipend in 2022/23
- Health insurance
- Students do not pay tuition

Students who successfully compete for outside funding receive a $3,000 Dean’s Excellence Award.

* Baylor College of Medicine reserves the right to increase, decrease, or alter benefits. Up-to-date information on benefits is provided at bcm.edu/gradschool.

“I chose Baylor College of Medicine because it offers a combination of opportunity and affordability that is unmatched by other options for my graduate training. The collaborative culture was also one of the key attributes that drove me to choose BCM. My colleagues and I had projects with labs from across the hall to around the world. These relationships were essential for networking and exploring future opportunities in ways that would not be possible without the collaborative efforts at all levels of the institution.”

PATRICK MITCHELL, PH.D.
ALUMNUS
STAFF ENGINEER, NATIONAL CENTER FOR MACROMOLECULAR IMAGING

ADMISSIONS

We look at every applicant as a whole person, not a collection of statistics. We seek students who are pursuing science because their interest in it is so strong that they cannot imagine doing anything else.

Of course we look at your GPA. But numbers are not the primary factors we value in our students. So what are we looking for?

Research Experience
Motivation
Commitment
Diversity

Applicants are encouraged to select both a first- and second-choice program. If the first program you list is unable to accept your application, it will automatically be sent to the second for consideration.

“I chose BCM because of the supportive atmosphere. I am thankful to have peers in the graduate school who understand how I perceive what is going on around me as a first generation Latina. Having people I can open up to when I’m struggling, who won’t diminish how I understand the world around me, and who celebrate little things that mean so much more for a URM.”

MARLYD MEJIA
STUDENT

IMPORTANT DATES

SEPT. 1 ............... FREE APPLICATION SYSTEM OPENS.
JAN. 1 ................ APPLICATION DEADLINE. Applications received by Dec. 1 will be considered for early review and are strongly encouraged. Late applications will be considered on a space-available basis.
JAN./FEB. ............. INTERVIEWS ARE HELD BY INDIVIDUAL PROGRAMS.
FEB./MARCH/APRIL ... ADMISSION OFFERS ARE EXTENDED.
APRIL 15 .............. FINAL DECISIONS BY STUDENTS TO ACCEPT AN OFFER.

TO BEGIN YOUR APPLICATION, VISIT bcm.edu/gsbs/admissions
FIND YOUR FIT

With more than 600 STUDENTS and 600 FACULTY MEMBERS, you will have a diverse group of potential colleagues, mentors, and advisors at Graduate School of Biomedical Sciences at Baylor College of Medicine.

But, no need to worry that you will be lost in the crowd. Our graduate programs provide each student a smaller community within the whole. While strongly grounded in BCM’s collaborative, innovative culture, each interdisciplinary program has its own personality and unique offerings.

DIVERSE PERSPECTIVES
Interdisciplinary programs integrate related research across basic science and clinical departments and academic centers. Our faculty members have the freedom to select the programs that align with their research. Rather than be bound by the department or center into which they were hired, faculty opt into participation in graduate programs that align with their research interests. This ensures that you will interact with faculty who bring diverse backgrounds, perspectives, and experience to your chosen field of study.

FLEXIBILITY TO PURSUE YOUR PASSIONS
Your program will provide a home base, set your required coursework and qualification requirements and provide a network of faculty and students who share your interests. However, when selecting laboratories in which to rotate, and ultimately the one in which you will pursue your dissertation research, all the resources of BCM are open to you. In addition to rotations in laboratories of faculty in your program, you have the option to complete rotations with any member of the graduate school faculty.

“...and the student, as our first priority. You will choose your mentor from over 600 faculty members and select courses that fit your research interests.”

CAROLYN SMITH, PH.D.
DEAN, GRADUATE SCHOOL
OF BIOMEDICAL SCIENCES

STUDENT LIFE

You will be able to have a life outside of the classroom and the lab during graduate school. Whether you opt for participating in College-run intramural sports, social and community service projects organized by the Graduate Student Council, or exploring the Houston restaurant scene, you will find plenty to network and take your mind off school.

FOR MORE INFORMATION bcm.edu/gsbsstudentorgs
I chose to pursue a career in cancer research because I wanted a chance to help people. I believe that our discoveries will translate into new medicines and new treatment strategies based on the underlying biology of each patient’s disease.”

MICHAEL L. GATZA, PH.D.
ASSISTANT PROFESSOR OF RADIATION ONCOLOGY, RUTGERS CANCER INSTITUTE OF NEW JERSEY

“...decided to pursue graduate work in cancer and cell biology because I wanted to explore novel biochemical and cellular mechanisms that could potentially advance human health by becoming future targets for pharmacologic intervention.”

JOSHUA GRAVES, PH.D.
ALUMNUS
POSTDOCTORAL ASSOCIATE AT BCM

Positions currently held by BCM alumni whose research focused on cancer and cell biology include:

Associate Professor, Albert Einstein College of Medicine
Assistant Professor, Vanderbilt University
Chemist, United States Army Corps of Engineers
Commercial Manager, Shell Oil
Principal Investigator, Neural Stem Cell Institute
Postdoctoral Associate, BCM
Professor, BCM and Pathologist-in-Chief, Texas Children’s Hospital
Professor, Texas A&M University

Professor, University of California, San Francisco
Research Scientist, National Center for Advancing Translational Sciences in the National Institutes of Health
Senior Regulatory Specialist, Acknowledge Regulatory Strategies
Scientist, Thermo Fisher Scientific

Scientist, National institute of Environmental Health Sciences
Senior Scientist, Shattuck Labs

Acquire the knowledge and skills you need to break barriers in cancer and cell biology.

Our faculty includes members of the National Institutes of Health-designated comprehensive cancer center—the Dan L. Duncan Comprehensive Cancer Center, and the BCM Department of Molecular and Cellular Biology, which is ranked in the top ten in the country for National Institutes of Health funding.

You will receive broad, interdisciplinary training in the fundamentals of normal cell function and cancer with an emphasis on a wide spectrum of genomic analyses to growth, invasion, and metastasis. Small class size facilitates one-on-one interactions with some of the nation’s leading scientists. Your choices for curriculum can be individualized depending on what courses you have taken during your undergraduate and/or master’s studies and your interests. The program is supported by NIGMS Training Grant T32GM136560.

Learn about research advances made by our faculty and students, find details about our curriculum, discover faculty whose research interests match your own, and more on our website bcm.edu/cancer-cell

RESEARCH INTERESTS

- Aging
- Cancer Genetics and Genomics
- Cell Signaling
- Endocrine Regulation
- Gene Regulation
- Metabolism and Mitochondrial Function
- Microbiome and Viral Oncogenesis
- Protein Structure and Function
- Reproductive Biology
- Stem Cell Biology and Therapeutics
- Tissue Origins of Cancer – Breast, Lymphoma/Leukemia, Ovary, Prostate
- Tumor Immunology and Immunotherapy

This image is from studies exploring new ways to fight ovarian cancer. It shows cytoplasmic distribution of p53-R175H mutant protein (green) in TYK-Nu ovarian cancer cells that have been treated with drug MCB-613. Nucleus of cells is shown in blue.
I decided on my career path when I realized as an undergraduate that the foundational mechanisms of life and the root causes of disease can be revealed in rich detail at the molecular—or even chemical—level.

NICK YOUNG, PH.D.
CPSB FACULTY

Assistant Director, Icahn School of Medicine at Mount Sinai
Associate Director, HD Biosciences
Consultant, Lawrence Berkeley National Laboratory
Director, Molecular Genetics Laboratory, Stanford Health Faculty, King Abdullah University of Science and Technology
Instructor, UT Southwestern Medical Center
Intellectual Property Lawyer, Fandiga Partners
Professor and Division Head, UT Austin

“I chose CPSB because of its leadership in cutting-edge, molecular-level mechanistic science and its location in the world’s largest biomedical research complex.”

KARL PONCHA
STUDENT

RESEARCH AREAS

- Cancer Biology
- Chemical Biology
- Computational Biophysics and Bioinformatics
- Cryo-EM and Cryo-Electron Tomography
- Developmental Biology
- Drug Discovery
- Drug Resistance Mechanisms
- Electrophysiology
- Enzymology
- Gene Regulation, Chromatin and Epigenetics
- Gene Therapy
- Genetic Engineering
- High Throughput Screening
- Membrane Proteins
- Metabolomics
- Neuroscience
- NMR
- Organic Synthesis and Medicinal Chemistry
- Proteomics
- Signal Transduction
- Single-Molecule and Super-Resolution Fluorescence
- Spectroscopy and Biophysical Methods
- Structural Biology
- Synthetic Biology
- Virology
- X-Ray Crystallography

Learn about research advances made by our faculty and students, find details about our curriculum, discover faculty whose research interests match your own, and more on our website bcm.edu/cpsb

Positions currently held by BCM alumni whose research focused on chemical, physical, and structural biology include:

Assistant Director, Yale University
Principle Investigator, Institute Pasteur of Shanghai
Postdoctoral Associate, Massachusetts Institute of Technology
Regulatory Scientist-Chemist, U.S. Food and Drug Administration
Senior Bioinformatics Director, BCM
Senior Scientist, LakePharma, Inc.
Assistant Professor, University of North Carolina Medical School
Associate Director, Qiagen
Work at the interface of developmental biology, physiology, health, and disease using diverse disease models to understand the biology of human diseases that can impact all stages of life and develop diagnostic and therapies to treat them. Join us in developing and applying new technologies and innovative methods to deepen understanding of the chemical, physical, and structural basis of fundamental biology and human disease.

Human disease can impact all stages of life—from hereditary and congenital birth defects to the degenerative diseases of old age—as well as any of the organs or systems in the human body. Our approach crosses traditional barriers between disciplines to understand the basic biology underlying health and disease and developing therapeutics.

With more than 150 faculty members, representing most of the departments and centers at BCM and many at our partner institutions, you will not only find mentors who share your interests, but also colleagues who will expose you to new ideas and perspectives. In addition to your research mentor, you may elect to have a clinical mentor to aid you in selecting courses and shaping your research project in ways that facilitate the translation of your discoveries into new approaches to enhance patient care.

Using diverse techniques our faculty and students investigate questions that touch on each of these domains and use models that may include any organ, tissue, physiological system, or organism in order to understand their fundamental biological processes and to identify and develop new therapeutics.

This is a picture of the hearing organ of the fruit fly. The green spots mark a novel protein that has homology to proteins involved in hearing and deafness in humans. BCM researchers use the fruit fly to model many human diseases and have developed and made available a large, versatile library of fruit flies that can be used to perform efficient and elegant in vivo gene-specific manipulations.

Learn about research advances made by our faculty and students, find details about our curriculum, discover faculty whose research interests match your own, and more on our website bcm.edu/ddmt

“Contact us to learn more about the DDMT program."

JOHN GEBERT
STUDENT

“I received my bachelor’s degree in physics, but I wanted a more hands-on approach that would have more immediate impact on patient care. Thus, I chose to pursue graduate research in translational biology.”

ALEXANDRIA DOERFLER
STUDENT

Scientists and managers at: American Institutes for Research, AstraZeneca/Medimmune, Food and Drug Administration, Fu Wai Hospital in China, Genailis, IBM, Naval Medical Research Unit, National Institutes of Health, Novartis, Roche Diagnostics, Sanofi Genzyme and Thermo Fisher Scientific

As well as science writers, consultants, and advisors.

Faculty Members and Postdoctoral Fellows at: BCM, Harvard Medical School, University of California - San Francisco University of Science and Technology in China, University of Lausanne in Switzerland, University of Pennsylvania, Rockefeller University, Washington University School of Medicine, and Yale University

Clinicians at: Brigham and Women’s Hospital, Stanford University School of Medicine, Texas Spine & Neurosurgery Center, University of Arkansas Medical Sciences, and UCSF

DEVELOPMENT, DISEASE MODELS & THERAPEUTICS GRADUATE PROGRAM

CONTACT US
713.798.4029
ddmtradprogram@bcm.edu

GENERAL ADMISSIONS QUESTIONS
713.798.4029
gradappboss@bcm.edu

CAREER PATHS

BCM alumni whose research focus has included development, disease models and therapeutics include:

Scientists and managers at: American Institutes for Research, AstraZeneca/Medimmune, Food and Drug Administration, Fu Wai Hospital in China, Genailis, IBM, Naval Medical Research Unit, National Institutes of Health, Novartis, Roche Diagnostics, Sanofi Genzyme and Thermo Fisher Scientific

As well as science writers, consultants, and advisors.

Faculty Members and Postdoctoral Fellows at: BCM, Harvard Medical School, University of California - San Francisco University of Science and Technology in China, University of Lausanne in Switzerland, University of Pennsylvania, Rockefeller University, Washington University School of Medicine, and Yale University

Clinicians at: Brigham and Women’s Hospital, Stanford University School of Medicine, Texas Spine & Neurosurgery Center, University of Arkansas Medical Sciences, and UCSF

RESEARCH MODEL

DEVELOPMENT, DISEASE MODELS & THERAPEUTICS

NORMAL FUNCTION & REGULATION

DISEASE DEGENERATION

Using diverse techniques our faculty and students investigate questions that touch on each of these domains and use models that may include any organ, tissue, physiological system, or organism in order to understand their fundamental biological processes and to identify and develop new therapeutics.

This is a picture of the hearing organ of the fruit fly. The green spots mark a novel protein that has homology to proteins involved in hearing and deafness in humans. BCM researchers use the fruit fly to model many human diseases and have developed and made available a large, versatile library of fruit flies that can be used to perform efficient and elegant in vivo gene-specific manipulations.
CONTRIBUTE TO OUR UNDERSTANDING OF FUNDAMENTAL GENETIC AND GENOMIC PRINCIPLES. USE THE INSIGHTS YOU GAIN TO EXPLORE THE GENETIC BASIS OF HUMAN DISEASE, ELUCIDATE NEW BIOLOGY, BOTH BASIC AND APPLIED, AND DEVELOP NEW TREATMENT OPTIONS TO IMPROVE HUMAN HEALTH.

As the home of the number one NIH-funded genetics department, the largest clinical genetics program in the nation, and the BCM Human Genome Sequencing Center—one of only four such centers in the nation—Baylor College of Medicine is an international leader in genetics and genomics. Our faculty members and students publish studies from fundamental to translational research in top-tier journals in the biomedical field.

Our core curriculum will provide you with a broad background in basic aspects of genetics, molecular biology, bioinformatics, biochemistry, and cell biology. Partnering with program leadership and your mentor, you will have the flexibility to select courses that match your interests and prepare you for the career you want. These may include any course offered at BCM as well as offerings from Rice University, the UT Health Science Center – Houston, the University of Texas MD Anderson Cancer Center, and the University of Houston. If you are interested in focusing your graduate training on bioinformatics, genomics, and/or systems biology, read about our BiGSB track as you explore our website.

“I decided to pursue genetics and genomics because practically everything in biology, ranging from how single cells divide to how organs like the brain develop and function, results from an organism’s DNA and how it responds to phenomena such as mutations and environmental stimuli.”

SEAN DOOLING
STUDENT

“Even as a trainee, it was clear to me that the integrated genetics department at Baylor was unique in the world and that the environment would never limit what I could achieve in science.”

BRENDAN LEE, M.D., PH.D.
ROBERT AND JANICE MCNAIR ENDOWED CHAIR AND PROFESSOR OF MOLECULAR AND HUMAN GENETICS, BCM

Learn about research advances made by our faculty and students, find details about our curriculum, discover faculty whose research interests match your own, and more on our website bcm.edu/genetics-genomics
Join us in investigating the importance of interactions between microbes, their hosts, and the immune system in human health and disease.

Our innovative program builds on active self-directed learning and peer-to-peer teaching to deliver a personalized, inquiry-based education. We integrate fundamental and cutting-edge elements of immunology and microbiology. You will acquire a sophisticated understanding of basic, translational, and clinical immunology and microbiology problems and the skills required to use state-of-the-art techniques. Electives allow you the flexibility to pursue and develop areas of individual, scientific, and professional interest. Core and elective offerings also immerse students in the activities of grant writing and scientific presentations. You will actively participate in seminars, journal clubs, annual retreats, and other activities in which you will present your work.

“I am fascinated with learning how viral and bacterial pathogens can facilitate infection and how the human body has adapted to overcome these stresses. By understanding these mechanisms, we can gain a stronger insight into developing strategies to help protect people.”

WILHELM SALMEN
STUDENT

IMMUNOLOGY & MICROBIOLOGY
GRADUATE PROGRAM

CONTACT US
 713.798.4029
iymphprogram@bcm.edu

GENERAL ADMISSIONS QUESTIONS
 713.798.4029
gradappboss@bcm.edu

“I chose to pursue graduate work in immunology and microbiology because I am very interested in host/pathogen interactions and using this knowledge to develop vaccines. The IM program allows me to explore all of my research interests, with a translational focus that could one day improve the health and lives of people.”

BRITTANI BLUNCK
STUDENT

RESEARCH AREAS
• Antibiotics, Antivirals, and Drug Resistance
• Autoimmune and Inflammatory Diseases
• Host-Microbe Interactions and Pathogenesis
• Immune System Development, Metabolism, and Function
• Immunotherapy, Gene Therapy, and Vaccine Development
• Mechanisms of Viral Replication
• Microbial Macromolecular Structure and Function
• Microbiome in Health and Disease
• Molecular and Viral Carcinogenesis and Cancer Immunology

Learn about research advances made by our faculty and students, find details about our curriculum, discover faculty whose research interests match your own, and more on our website bcm.edu/immunology-microbiology

CAREER PATHS
Positions currently held by BCM alumni whose research focused on immunology and microbiology include:

Assistant Professor, BCM
Assistant Professor, MD Anderson Cancer Center
Associate Professor, UC Berkeley and Howard Hughes Medical Institute
Attorney, Vinson & Elkins
Bioinformatician, University of Pennsylvania School of Medicine

Director of Production Maximization & Microbiology, Nalco Champion
Director, App Biopharmaceutical
Epidemiologist, Centers for Disease Control and Prevention
Lead Data Scientist, Nielsen

Postdoctoral Scientist, Harvard University
Professor, BCM
Senior Director, Emergent Biosolutions

This is image is from investigations of the structure and molecular biology of gastrointestinal viruses to understand the basic mechanisms that control virus replication, morphogenesis, virus-host interactions, and pathogenesis. It is an immunofluorescent image of mouse small intestinal track showing proliferating cells (light green) climbing up from the intestinal stem cell compartment to replace rotavirus-infected, damaged cells (red). Blue color marks cell nuclei.
The Next Frontier in Biomedical Science: Understanding the Human Brain

Our program focuses on the nervous system from its most basic ion channels to its most advanced computations. The core curriculum is designed to provide you with a broad foundation in modern neuroscience, including current laboratory techniques, genetics, cell biology, developmental neuroscience, neurophysiology, neuroanatomy, systems and computational neuroscience, and neurological disease.

Faculty research interests span a wide range of neuroscience fields from molecular and cellular neurobiology to circuits, systems, and theoretical modeling. Student research interests are equally broad yet a sense of community characterizes interactions across the program. Students participate in cutting-edge research starting in their first year rotations and go on to successful careers in academia, industry, teaching, and law where their strong graduate training plays a key role.

Baylor College of Medicine is regularly ranked as one of the top institutions receiving neuroscience funding from the National Institutes of Health. Our work is supported by state-of-the-art research facilities for molecular neurobiology, neurophysiology, microscopy, and functional human brain imaging, in addition to college-wide core laboratories offering the latest instrumentation for experimental work.

Contact Us

General Admissions Questions

713.798.4029 gradadmissions@bcm.edu

Research Interests

- Information Processing in Visual, Auditory, and Vestibular Systems
- Neural Mechanisms Mediating Higher Nervous System Functions, including Perception, Learning, Memory, Attention, and Decision Making
- Neurodevelopment and Neuroregeneration
- Glial Formation and Function in the Nervous System
- New Technologies to Record and Stimulate Neural Activity
- Diseases of the Nervous System, including Multiple Sclerosis, Epilepsy, Alzheimer’s disease, and Autism Spectrum Disorders

 Positions currently held by BCM alumni whose research focused on immunology and microbiology include:

- Assistant Professor, Institute of Molecular Biology and Biotechnology at Foundation of Research and Technology-Hellas, Greece
- Assistant Professor, University of Texas Health Science Center at Houston
- Clinical Fellow in Neuropathology, University of California San Francisco
- Damon Runyon Postdoctoral Fellow, Harvard Medical School
- Data Analyst Manager, Centers for Disease Control and Prevention Foundation
- Investigator, Novartis Institutes for BioMedical Research
- Postdoctoral Fellow, Erasmus University Medical Center, Netherlands
- Postdoctoral Fellow, Yale University
- Postdoctoral Researcher, University of Tubingen
- Postdoctoral Scholar, Stanford University
- Principal Investigator and Project Assistant Professor, International Research Center for Neurointelligence, University of Tokyo
- Resident in Ophthalmology, Johns Hopkins Medicine
- Resident in Psychiatry, Columbia University New York Presbyterian
- Software Engineer, Amazon.com, Inc.
- Teacher, Neuroscience and Biology, Proof School San Francisco Bay Area
- User Experience Specialist, MathWorks

“The brain is the most complex organ and can only be truly understood if scientists from all sorts of disciplines come together. Thereby, neuroscience research mimics the complexity and diversity of the brain—it is built on collaboration and communication.”

Meike van der Heijden, Ph.D.
Alumna Postdoctoral Fellow at BCM
Develop new quantitative modeling methods and advanced computational approaches to further understanding of biological systems.

The Quantitative and Computational Biosciences program will bring you to the new frontiers of biomedical research where you will make discoveries and improve human health through quantitative modeling, advanced computing, and data science.

With leading researchers from seven institutions, we bring together the resources of the Texas Medical Center—the world’s largest complex of biomedical research institutions and hospitals, Rice University, and neighboring institutions—to discover new biomedical knowledge and improve human health.

The overall philosophy of the course requirements is to prepare you in both the specialized area of research in which you choose to focus and in cell and molecular biology. Because our students come from a variety of academic backgrounds we will design your curriculum based on your individual needs.

“Quantitative and computational biology tackles a complex problem from a global view, and as a result provides freedom to go deeper into a specific branch of your choice, the combination of which furthers the understanding of the complex problem.”

BINGSHAN LI, PH.D.
ALUMNUS
ASSOCIATE PROFESSOR OF MOLECULAR PHYSIOLOGY AND BIOPHYSICS
VANDERBILT GENETICS INSTITUTE

RESEARCH AREAS

•— Bioinformatics and Cancer Informatics
•— Computational Biology
•— Computational Biophysics
•— Computational Neuroscience
•— Computational Structural Biology
•— Data Science
•— Deep Learning
•— Genome and Epigenome Informatics
•— Imaging and Image Analysis
•— Metabolomics and Proteomics
•— Systems Biology and Precision Medicine
•— Text Mining and Medical Informatics

This is an annotated 3-D electron tomogram of a neuron-like culture cell determined by cryo-electron tomography. Researchers use cryo-electron tomography to visualize macromolecules frozen in action and details of structures inside of cells. Looking to increase the efficiency of the time-consuming process of annotation, Baylor researchers developed an automated method that requires less human participation.
The vision of Baylor College of Medicine is to improve health through science, scholarship, and innovation. Realizing this vision requires providing the next generation of translational research leaders with the knowledge, skills, and experience necessary to apply the knowledge gained from the basic sciences to address clinical and community healthcare needs.

Baylor graduate students in their first or second year who are interested in a career focused on translating biomedical discoveries into molecular medicine advances to benefit human health are invited to apply for the Clinical Translational Research Certificate of Added Qualification (CTR-CAQ) program. Participants will acquire the foundational knowledge and professional skills required of effective leaders of translational research teams.

YOU WILL:

• Gain knowledge of the ethics, regulatory aspects, and practical conduct of clinical research
• Conduct hands-on work with peers in small groups to use this knowledge in simulated scenarios
• Master the skills necessary to work in and lead teams of researchers
• Participate in clinical/translational conferences and meetings where you will learn from and interact with experts in translational research
• Complete a capstone project with mentorship from your chosen clinical translational research mentor who will introduce you to clinical research

ACTIONS
Admission to the CTR-CAQ is open to BCM Ph.D. candidates in their first or second year. Each year, 30 students will be selected to participate. The two-year program is run in coordination with our seven interdisciplinary Ph.D. programs so that it will not slow down your progress with your thesis research. You and your mentor will design your CTR-CAQ work so that it integrates with or complements your thesis research.

FOR MORE INFORMATION, CONTACT
Kelly Levitt
Program Administrator
CTR-CAQ@bcm.edu

YOUR MENTORS
The Graduate School of Biomedical Sciences at Baylor College of Medicine is embedded within a leading health sciences university with a top-ranked medical school and located in the heart of the world’s largest medical complex. For all GSBS students, this facilitates establishing collaborations with clinicians, and for students in the CTR-CAQ program this provides access to many exceptional clinical-translational research mentors. In the CTR-CAQ program you will have the opportunity to select mentors from:

Asthma Clinical Research Center
BCM adult outpatient clinics
Center for Cell and Gene Therapy
Dan L Duncan Comprehensive Cancer Center
Institute for Clinical and Translational Research
Lester and Sue Smith Breast Center
Texas Children’s Hospital Fetal Center
Texas Children’s Hospital pediatric clinics
USDA/ARS Children’s Nutrition Research Center
Vaccine Research Institute
And many more clinical research centers and clinics.

For a full listing of BCM research centers, visit bcm.edu/research/centers
For a full listing of BCM healthcare clinics and centers, visit bcm.edu/healthcare/care-centers
PHYSICIAN-SCIENTIST TRAINING PROGRAMS

BCM offers two programs designed to prepare graduates with passions for discovery and patient care to become independent investigators in both basic research and clinical investigation.

MEDICAL SCIENTIST TRAINING PROGRAM (MSTP)
The MSTP provides integrated scientific and medical training leading to the dual M.D./Ph.D. degree to highly motivated students with outstanding research and academic potential seeking a career as a physician-scientist. Students may pursue the Ph.D. portion through one of the seven interdisciplinary programs offered at Baylor College of Medicine or through the Rice University Bioengineering Graduate Program. Currently in its 42nd year of funding from the National Institutes of Health, the program has trained more than 250 physician scientists.

ALUMNI OUTCOMES: M.D./PH.D. PROGRAM
Current career position of BCM-MSTP graduates who responded to a recent survey.

CLINICAL SCIENTIST TRAINING PROGRAM (CSTP)
The CSTP is designed for junior faculty and senior residents or subspecialty fellows at Baylor College of Medicine. The program offers Ph.D. (for faculty only) and M.S. (for faculty and senior residents and fellows) degrees in clinical investigation. Both the Ph.D. and M.S. programs are designed for academic clinicians with a significant commitment to clinical research. The Ph.D. degree takes four to five years to complete, and the M.S. should be completed within three years. The CSTP also offers a one-year program leading to a Certificate of Added Qualification in Clinical Investigation.

DIVERSITY AND INCLUSION
We view fostering diversity and inclusion as a prerequisite to accomplishing our institutional mission and promoting scientific innovation. We are committed to recruiting students from diverse backgrounds and providing a welcoming, supportive learning environment for all members of our community.

Through the NIH Initiative for Maximizing Student Development (IMSD), BCM has received funding since 1998 to educate and train scientists from populations that have been traditionally underrepresented in the sciences. The IMSD at BCM offers comprehensive, individualized education, including:

• a summer bridge program that provides individualized support for success
• monthly Association of Graduate Student Diversity activities
• an underrepresented scientist seminar series
• skills-building workshops to help you thrive, not just survive, as a scientist.

There are currently 96 underrepresented students in Ph.D. and M.D./Ph.D. programs at BCM, as well as more than 120 Ph.D. and M.D./Ph.D. alumni. Our alumni have jobs in academia, industry, and other biomedical fields across the country.

Through undergraduate programs and post-baccalaureate programs, BCM reaches out to students across the country to encourage individuals from groups underrepresented in science to pursue science as a career. The Summer Medical and Research Training (SMART) program and BCM PREP program provide opportunities for research-oriented individuals to gain valuable experiences in biomedical research in a supportive environment with supplemental educational activities. The Association for Graduate Student Diversity, a student-run organization, strives to increase diversity, to promote retention and graduation of graduate students in the biomedical sciences, and foster professional and career development of our members.

LEARN MORE AT bcm.edu/diversityprograms

“I had experience in research, but had no idea whether or not I was ready to commit to graduate school or continue with my original plan to earn an M.D. While exploring the BCM website, I stumbled upon the PREP program website. I rushed to apply before the deadline. The program helped me realize that I could do whatever I wanted with this degree and never be restricted to just one career path.”

GRACE ADENIYI-IPADEOLA
STUDENT
In addition to the Graduate School of Biomedical Sciences, Baylor College of Medicine includes:

Baylor College of Medicine is also co-owner of Baylor St. Luke’s Medical Center and Baylor Genetics.

SCHOOL OF MEDICINE:
Ranked 22nd for research and 4th for primary care by U.S. News & World Report, Baylor College of Medicine’s School of Medicine is the least expensive private medical school in the U.S. Exceptionally diverse clinical affiliates set BCM apart as a leader among the world’s best medical schools.

Many clinician-scientists within the School of Medicine also serve on the faculty of the graduate school, bridging the clinic and the laboratory to provide graduate students with a clear perspective of the impact of their research on health.

SCHOOL OF HEALTH PROFESSIONS:
At BCM, health professions education include genetic counseling, nurse anesthesia, physician assistant, and orthotics and prosthetics.

The Doctor of Nursing Practice-Nurse Anesthesia program is ranked second in the nation and the Physician Assistant Program is ranked third in the nation by U.S. News & World Report.

NATIONAL SCHOOL OF TROPICAL MEDICINE:
The educational, advocacy and research initiatives of this school are focused on the neglected diseases that disproportionately afflict “the bottom billion,” the world’s poorest people. Researchers from Tropical Medicine also serve on the faculty of the graduate school, through which students can conduct research on neglected tropical diseases.

Baylor College of Medicine is also co-owner of Baylor St. Luke’s Medical Center and Baylor Genetics.
Graduate School of Biomedical Sciences - Admissions
Baylor College of Medicine
One Baylor Plaza, MS Code BCM215
Houston, Texas 77030, U.S.A.
✉ gradappboss@bcm.edu

LEARN MORE AT BCM.EDU/GRADSCCHOOL

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