



BIOMEDICAL LABORATORY & CLINICAL SCIENCES

- Bachelor of Science in Biomedical Laboratory & Clinical Sciences
- Certificate in Biotechnology
- Certificate in Clinical Research



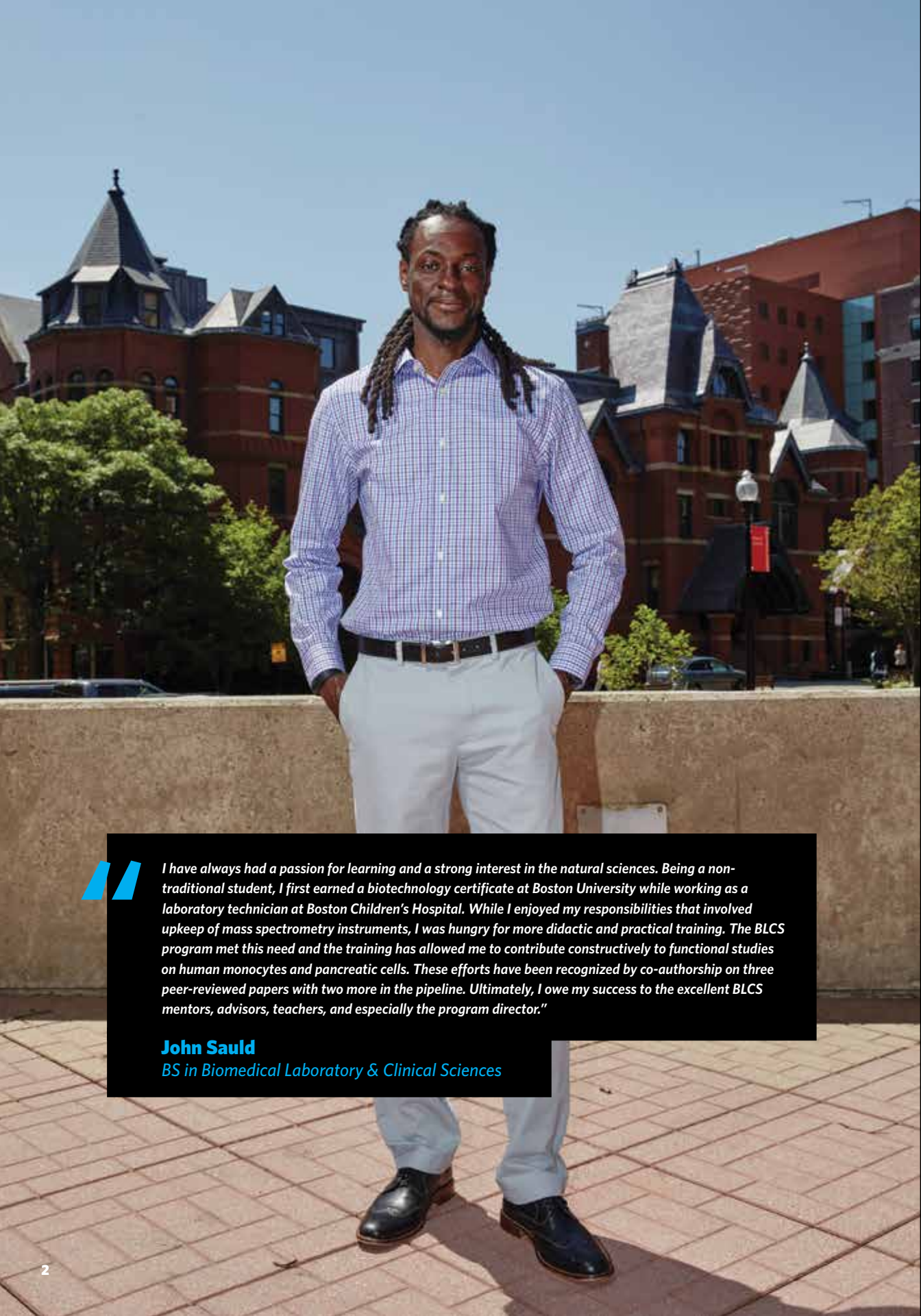
bu.edu/met/biotech



Boston University School of Medicine
& Metropolitan College



BOSTON
UNIVERSITY



I have always had a passion for learning and a strong interest in the natural sciences. Being a non-traditional student, I first earned a biotechnology certificate at Boston University while working as a laboratory technician at Boston Children's Hospital. While I enjoyed my responsibilities that involved upkeep of mass spectrometry instruments, I was hungry for more didactic and practical training. The BLCS program met this need and the training has allowed me to contribute constructively to functional studies on human monocytes and pancreatic cells. These efforts have been recognized by co-authorship on three peer-reviewed papers with two more in the pipeline. Ultimately, I owe my success to the excellent BLCS mentors, advisors, teachers, and especially the program director."

John Sauld
BS in Biomedical Laboratory & Clinical Sciences

UNDERGRADUATE BIOMEDICAL PROGRAMS

Boston University Metropolitan College (MET) & School of Medicine (BUSM)

- Bachelor of Science in Biomedical Laboratory & Clinical Sciences
- Certificate in Biotechnology
- Certificate in Clinical Research

Massachusetts is home to one of the world's preeminent biotech superclusters. According to the Massachusetts Biotechnology Council (MBC), the state hosts more than 700 biotech and biopharma companies, and the industry grew by 4.9% in 2014—the highest annual growth rate since 2008. The state's job market has remained robust and continues to grow. During the period of October through December 2015, the total number of job listings on the MBC website jumped by 36.5% compared to the same period in 2014.

Massachusetts-based medical centers and other research institutions also contribute to the state's lead in biopharma, as well as to the advances in the biomedical sciences. In 2014, area institutions—including Boston University's teaching affiliate Boston Medical Center, located on BU's Medical Campus (BUMC)—received a total of \$3.4 billion in National Institutes of Health (NIH) funding.

In May 2014, the mayors of Boston, Cambridge, Quincy, Somerville, and Braintree announced the Life Sciences Corridor, following the route of Boston's MBTA Red Line subway and linking almost five hundred life sciences companies—including many of the largest biopharmaceutical companies in the world—as well as some of the nation's most highly rated hospitals, clinics, and university medical campuses (such as Boston Medical Center).

Home to the nation's #1 biopharma cluster

(Genetic Engineering & Biotechnology News)

The Charles River Campus and Medical Campus offer state-of-the-art resources and valuable connections to Boston industry, including 26 BUMC-affiliated hospitals. Students in the Biomedical Laboratory & Clinical Sciences degree program and the Biotechnology and Clinical Research certificate programs benefit from part- and full-time study options, evening and Saturday courses, and valuable hands-on training through laboratory courses and externships at research facilities in the greater Boston area. Many students work in Boston's biomedical industry while pursuing their studies simultaneously.

Whether you are changing careers or working to improve your marketability, Boston University's program in Biomedical Laboratory & Clinical Sciences will prepare you for a fulfilling role in this fast-growing and rewarding industry.

BACHELOR OF SCIENCE IN BIOMEDICAL LABORATORY & CLINICAL SCIENCES

The bachelor's degree program in Biomedical Laboratory & Clinical Sciences (BLCS) combines general undergraduate education with special technical training that prepares students for positions in biomedical or clinical research. Courses are available in basic and more advanced theoretical and practical biomedical scientific areas. Lecture and laboratory courses in molecular biology, protein purification, tissue culture, Current Good Manufacturing Practice (cGMP), and other topics relevant to the biotech and biopharmaceutical industries help prepare students for fulfilling jobs and careers. Students can also choose to concentrate in clinical research courses, which prepare them for work in the world of clinical trials.

The time required to earn the degree depends on individual schedules, transferable credits, and the pace students establish for themselves to complete the program.



The Curriculum

The BLCS curriculum consists of 128 credits, to be earned in four distinct components:

Distribution Requirements (48 credits)

Distribution requirements comprise basic science and liberal arts courses.

Major Requirements (26 credits)

Major requirements are drawn from courses in the biomedical sciences taught at BU School of Medicine. Courses taken at other institutions may satisfy some of these requirements.

Major Electives (30–36 credits)

Major electives provide working knowledge in a range of relevant fields, such as regulatory and compliance issues, molecular biology, protein purification, and bioinformatics. Students choose from a wide range of offerings, and may concentrate on an area of their choosing.

Free Electives (8 credits)


Free electives allow students to complement and broaden their academic background based on career objectives and personal interests. Two 4-credit courses are required—possibly more depending on transfer credits—chosen with the advice of an academic counselor.

Externship/Clinical Research Practicum (10–16 credits)

Students gain hands-on professional experience in their chosen field by working in a laboratory or clinical research environment. Externships and practicums are completed in clinical, industrial, and university settings, and serve as the capstone for the Biomed students' undergraduate experience. Students must earn a minimum of 10 credits and may earn up to 16 credits with the director's approval.

Course Listings and Descriptions

A comprehensive list of courses, course descriptions, schedules, and requirements for the Biomedical Laboratory & Clinical Sciences program can be found online at bu.edu/met/biotech.



After graduating with my associate's in biotechnology from Middlesex Community College, I seamlessly transitioned into the BLCS program. Since starting, I have accelerated through the program with the intention of graduating within two years. The BLCS program offers rigorous course work with a flexible schedule that has allowed me to increase my work experience during the day, while taking classes at night. I am confident in my career potential as a result of the BLCS program."

Lindsay McGrail

BS in Biomedical Laboratory & Clinical Sciences

The Externship/Clinical Research Practicum

The externship is an integral component of the BLCS program, providing a valuable opportunity for students to gain hands-on experience in their chosen field. Students must meet with the program director to plan their externship and to perfect their résumé and LinkedIn profile at least one semester before their externship is to start. Externships can take place in biotechnology firms, clinical laboratories, and biomedical research facilities. Students have also arranged externships at their own workplace. A Memo of Agreement (MoA) signed by the student, a supervisor, and the program director is required. Students give a presentation to BLCS faculty at the conclusion of their externship, which factors into the grade.

A minimum of 10 externship credits (totaling 250 hours of supervised work) is required for the degree. Students register and pay regular tuition charges for externship credits.

Recent Externship Sites:

Beth Israel Deaconess Medical Center

Microcirculation Laboratory

Boston University School of Medicine

Department of Pathology & Laboratory Medicine

Boston Medical Center

Alzheimer's Disease Center

Department of Surgery

Cambridge Polymer Group

Genzyme Corp.

Biomanufacturing

Massachusetts General Hospital

Center for Cancer Immunology and

Cutaneous Biology Research Center

Pfizer

Analytical Research and Development

Shire Pharmaceuticals, Inc.

Biomanufacturing

Certificate Programs

The four-course certificate programs in Biotechnology or Clinical Research are designed for students who:

- Have a foundation in biology, chemistry, and math
- Already hold an undergraduate degree in the sciences
- Are career changers with a degree or job experience from another field

Enrollment in a certificate program requires submission of a résumé and an application, as well as an interview with the program director. With approval, students may design their own certificate curriculum based on individual goals. A professional LinkedIn profile is expected.

Certificate in Biotechnology

The Certificate in Biotechnology is an excellent option for those who wish to obtain advanced training in laboratory science or for those seeking undergraduate coursework to strengthen their application to graduate or professional school. The certificate provides knowledge and hands-on laboratory skills valued by biomedical, pharmaceutical, and biotechnology companies. A certificate is a great credential that sets a student apart in a competitive market.



A comprehensive list of courses, course descriptions, and requirements for the Certificate in Biotechnology can be found online at bu.edu/met/biotechcertificate.

Certificate in Clinical Research

Clinical research professionals are integral to the testing and evaluation of new drugs, devices, and procedures. The Certificate in Clinical Research focuses on critical issues related to the design, conduct, and analysis of clinical trials. As more and more biomedical products come to market, there is a growing need for these jobs.

A comprehensive list of courses, course descriptions, and requirements for the Certificate in Clinical Research can be found online at bu.edu/met/clinicalresearch.



This BLCS program has a variety of classes such as Cancer Biology, Pathology, Protein Purification, and Biochemistry. These have been essential to building my academic background and technical skills for the position I currently hold at Dana Farber Cancer Institute. The skills and academic background I gained from the BLCS program are now of service to the scientific community. In the research environment where I work, I carry out hands-on scientific research tasks such as data collection, sampling, imaging, detailed record keeping, and dosing. I also learned personal attributes at BLCS such as dedication, responsibility, and attention to detail. This mixture of skills, knowledge, and personal growth has been well rewarded, as I have been promoted three times in my company. I definitely attribute my success in the biomedical industry to the BLCS program. I strongly recommend the BLCS bachelor's to any student who wants to gain the skills and academic background to be able to work in the biotechnology industry."

Carmen Da Silva

Dana Farber Cancer Institute

BS in Biomedical Laboratory & Clinical Sciences ('14)

How to Apply

Students apply for admission to the Bachelor of Science in Biomedical Laboratory & Clinical Sciences degree program through Metropolitan College's Undergraduate Student Services. Secondary school graduation or an equivalency diploma, plus official transcripts from all postsecondary institutions attended, are required.

For detailed information about how to apply, including admission policies, financial assistance, and scholarship opportunities, visit bu.edu/met/admissions.



Financial Aid and Scholarships

The Boston University Financial Assistance office can answer your questions about financial aid, merit awards, need-based grants, and other educational grants and lending programs. Please visit bu.edu/finaid or call 617-353-2965.

Undergraduate Student Services

Metropolitan College's Undergraduate Student Services office assists undergraduate students with admission, registration, transferring credits, graduation, and the interpretation of academic policies and procedures within Boston University and MET.

Undergraduate Student Services
755 Commonwealth Avenue, Room 102
Boston, MA 02215

617-353-2980
metuss@bu.edu

Getting to the Medical Campus

There is a campus shuttle between the Charles River Campus and the Medical Campus; a schedule is available at bu.edu/thebus. For car, subway, and bus directions, please visit bu.edu/maps or bu.edu/met/biotech.



Thirty years ago, my father founded a chain of medical laboratories in Managua, Nicaragua, called Bioanalisis. I now work in the family business, applying everything I learned in BU's Biomedical Laboratory & Clinical Sciences program to bring new ideas and technologies to the way health care services are provided in Nicaragua. As a result, Bioanalisis was the first laboratory to start introducing molecular techniques—such as PCR—to diagnose viruses such as HPV.”

Alejandro Roman Arguello
BS in Biomedical Laboratory &
Clinical Sciences ('16)





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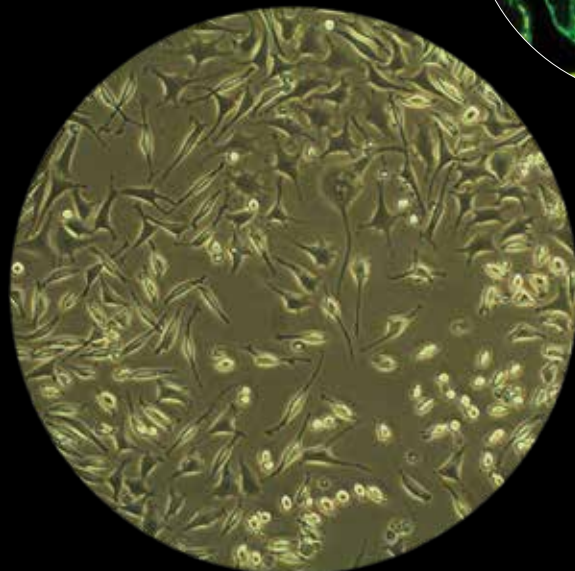
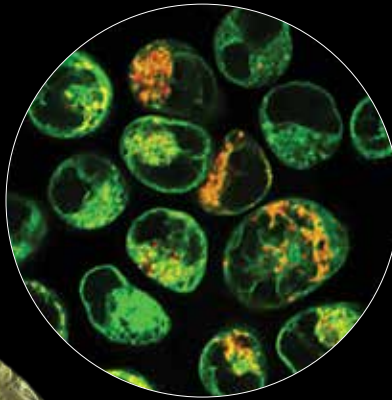
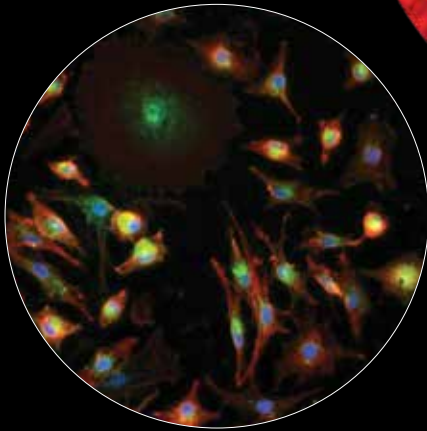
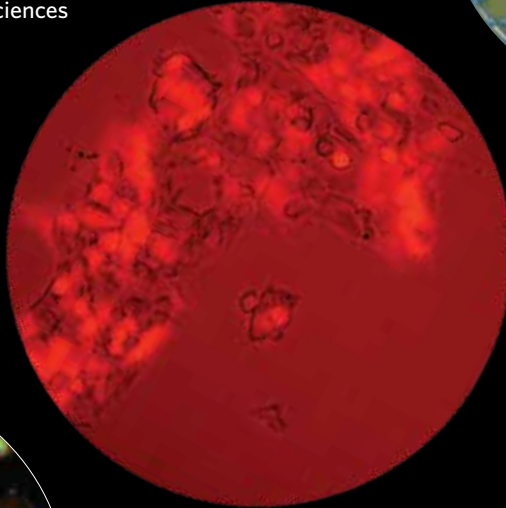
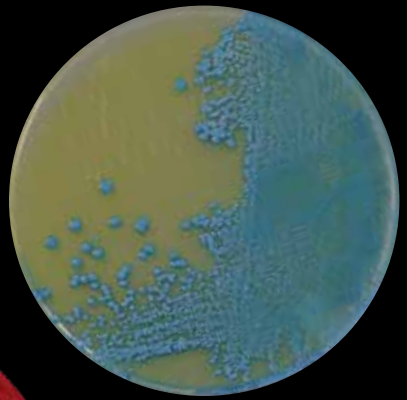
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