

REGENERATIVE MEDICINE AND ENTREPRENEURSHIP, MS

Stanton L. Gerson, MD, Dean of the CWRU School of Medicine and Director, National Center for Regenerative Medicine
slg5@case.edu

More Information: <https://case.edu/medicine/nrcm/training-education/masters-program-rgme>

Tracey L. Bonfield, PhD D(ABMLI), Director of the RGME Curriculum
Associate Professor, Department of Genetics and Genome Sciences, School of Medicine
Assistant Professor, Department of Medicine, School of Medicine
Assistant Professor, Department of Pathology, School of Medicine
tracey.bonfield@case.edu

Degree: Master of Science (MS)

Field of Study: Regenerative Medicine and Entrepreneurship

Program Overview

The RGME program is the first two-year master's level program in Ohio focused on Regenerative Medicine and Entrepreneurship. Students enrolled in the RGME program will have access to cutting-edge clinical and research facilities along with small biotechnology companies within the network of the National Center for Regenerative Medicine (NCRM). Program faculty and guest lecturers are leaders in the field of regenerative medicine and cell-based therapy development from a nationally ranked, medical research powerhouses including Case Western Reserve University, the Veale Institute for Entrepreneurship, Cleveland Clinic and Cleveland Clinic Innovations, University Hospitals, MetroHealth Vector and Cellular GMP facility and Medical Center, Louis Stokes Cleveland VA Medical Center and the Ohio State University. Further, collaborative relationships with industry partners enhance academic to commercial opportunities.

The BA/MS, BS/MS and MS in Regenerative Medicine and Entrepreneurship is part of the CWRU Fusion Program. This unique cross-campus collaboration allows students in the program to gain experience in science/medicine, law, and business. Throughout their classes, students will discover how all of these areas culminate into the field of Regenerative Medicine.

Additionally, those enrolled in the RGME program will have access to cutting-edge clinical and research facilities, along with small biotechnology companies, within the network of the National Center for Regenerative Medicine (NCRM).

RGME students are trained in academic, commercial, and clinical settings; to support cellular manufacturing, biotechnology innovation, legal compliance, financial analysis, venture capital, and business development activities with a regenerative medicine focus. Courses are then enhanced by taking advantage of the strengths across the university as a whole.

Entrepreneurship Sets Us Apart

The RGME program is a 30 credit hour, two-year program for recent

graduates to hone their problem-solving skill set. Students will be trained to solve modern regenerative medicine, commercial, and compliance problems, and to see those problems in the context of both an individual company and the greater marketplace. Students complete business and management courses as well as advanced regenerative medicine courses to become ready to tackle complex business problems with creative solutions. Partnerships with the CWRU School of Law, Weatherhead School of Business, Case School of Engineering and College of Arts and Sciences, and the Veale Institute of Entrepreneurship are integrated into the RGME MS, giving students diverse perspectives and career trajectories. In fact, students are encouraged to take advantage of the courses across all of the schools at CWRU, defined by the trajectory of students' interests in the field of regenerative medicine and entrepreneurship. Emotional Intelligence, Teamwork, Communication, Creativity, and Cultural Awareness are all fundamentals of the RGME program.

Career Opportunities

Every RGME student will be guided in a course of study by a program mentor to ensure the successful completion of the program and to support individual career development goals. Internships and hands-on learning are a very important part of a student's program experience. The RGME program offers many internship options including Cleveland Cord Blood, Glendor Inc., ESight, Abeona, and Solutions4USA. Case Western Reserve University has an entire department devoted to finding internships across the country for students. In addition, students may choose independent study in the laboratory of one of the many world-class research members of the NCRM.

Program graduates will qualify for a wide range of jobs, from clinical research, compliance, Federal Drug Administration regulatory policies to biotech companies to Wall Street. The market is in great demand for highly trained professionals to fill the knowledge gap in all these areas.

Graduate Policies

For graduate policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

Program Requirements

Our full-time students complete the 30 credit hour master's degree in two years while learning from internationally renowned faculty across the University. The core courses provide the foundational elements including stem-cell biology, biomaterial engineering, medical product development, federal regulations, bioethics, and how to take a discovery to market. In addition, students select an independent study in either hands-on laboratory research or an industry internship. Various science and business development electives, paired with seminars and career development opportunities, round out your tailored experience. In lieu of a thesis, students create public presentations and written scientific projects throughout the program.

Code	Title	Credit Hours
Required Courses:		
RGME 535	Foundations in Regenerative Medicine	3
RGME 545	Stem Product Biology, Bench to Bedside Development and Therapeutic Translation	3
BIOL 491	Contemporary Biology and Biotechnology for Innovation I	3

BIOL 492	Contemporary Biology and Biotechnology for Innovation II	3
RGME 467	Commercialization and Intellectual Property Management	3
<i>Choose one of the following:</i>		3
RGME 560	Regenerative Medicine Independent Study, Research Project	
	or RGME 565: Regenerative Medicine Independent Study, Internship	
Electives		12
Total Credit Hours		30

Science Program Electives^{a,b}

Code	Title	Credit Hours
Electives:		
CLBY 435	Seminar in Molecular Biology/Microbiology	6
CLBY 450	Cells and Pathogens	
CLBY 525	Neurodegenerative Diseases of the Brain and the Eye: Molecular Basis of the Brain-Eye Connection	
CRSP 412	Communication in Clinical Research - Grant Writing	
EBME 406	Polymers in Medicine	
EBME 451	Molecular and Cellular Physiology	
PATH 416	Fundamental Immunology	
PHRM 409	Principles of Pharmacology	
PHRM 511	Frontiers in Pharmacology	
PHRM 520	The Cellular and Molecular Hallmarks of Cancer	
PHRM 525	Topics in Cell and Molecular Pharmacology	

a Please review the full list of Science Program Electives.

b This list of electives is not all encompassing and is only a representation of potential electives.

Business Development Program Electives^{c,d}

Code	Title	Credit Hours
Electives:		
EPOM 400	Leadership and Interpersonal Skills	6
EPOM 403	Product and Process Design and Implementation	
HSMC 404	Managing People and Organizations	
LAWS 4302	Patent Law	
LAWS 4312	Patent Preparation and Prosecution II	
LAWS 5341	Commercialization and Intellectual Property Management	
LAWS 5366	Venture Finance & Transactions	

c Please review the full list of Business Development Program Electives.

d This list of electives is not all encompassing and is only a representation of potential electives.

Sample Plan of Study

First Year

Fall		Credit Hours
RGME 535	Foundations in Regenerative Medicine	3
BIOL 491	Contemporary Biology and Biotechnology for Innovation I	3
Science or Business Development Elective(s)		1-6
Seminars		
Credit Hours		9

Spring

RGME 545	Stem Product Biology, Bench to Bedside Development and Therapeutic Translation	3
BIOL 492	Contemporary Biology and Biotechnology for Innovation II	3
Science or Business Development Elective(s)		1-6
Credit Hours		9

Second Year

Fall

RGME 467	Commercialization and Intellectual Property Management	3
RGME 560	Regenerative Medicine Independent Study, Research Project	3
	or RGME 565	
	or Regenerative Medicine Independent Study, Internship	
Science or Business Development Elective(s)		1-6
Seminars		
Credit Hours		9

Spring

Science or Business Development Elective(s)		1-6
Credit Hours		3
Total Credit Hours		30