

# REGENERATIVE AND STEM CELL TECHNOLOGIES, MASTER OF SCIENCE

## MS in Regenerative and Stem Cell Technologies (<https://advanced.jhu.edu/academics/graduate/ms-regenerative-stem-cell-technologies/>)

Regenerative and stem cell technologies have the potential to revolutionize treatments for numerous diseases and health conditions. Students in the Master of Science in Regenerative and Stem Cell Technologies program develop the expertise needed to advance in this rapidly growing field. The program also provides students a chance to collaborate with JHU's research faculty during a brief lab residency that offers hands-on experience.

The program can be tailored for numerous career goals with electives that span an array of specializations. Specializations include:

- Bioinformatics
- Epigenetics
- Human molecular genetics
- Immunology
- Personalized medicine
- Pharmacology
- Recombinant DNA

This 10-course degree program offers an option to complete a thesis, is offered part time or full time, and can be completed 95% online. With a one-week lab residency, students find the flexibility needed to meet work and life commitments while preparing to advance in this emerging field.

## Admissions Criteria for all Advanced Academic Programs (<https://e-catalogue.jhu.edu/arts-sciences/advanced-academic-programs/enrollment-services/admission/>)

### PROGRAM-SPECIFIC REQUIREMENTS

In addition to the materials and credentials required for all programs, the Master of Science in Regenerative and Stem Cell Technologies program requires an undergraduate degree in the sciences or engineering with at least a 3.0 on a 4.0 scale. Meeting the minimum GPA requirement does not guarantee admission.

#### Resume

**Statement of Purpose:** Discuss why you wish to pursue the MS in Regenerative and Stem Cell Technologies degree. Focus on your long-term goals and how this academic program will help you achieve them. Discuss your academic and professional strengths, as well as any additional comments that will assist in evaluating your application materials.

#### Required Coursework:

- One semester of organic chemistry
- One semester of biochemistry

- One semester of molecular biology
- One semester of cell biology

## Program Requirements

Code	Title	Credits
<i>Core Courses - Required:</i>		24
AS.410.609	Developmental Biology	
AS.410.630	Gene Therapy	
AS.410.653	Regenerative Medicine: from Bench to Bedside	
AS.410.664	Ethics in Emerging Bioscience Technologies	
AS.410.753	Stem Cell Biology	
AS.410.780	Stem Cell Culture Laboratory Methods	
<i>Electives (Select four of the following):<sup>1</sup></i>		16
AS.410.604	Cellular Signal Transduction	
AS.410.610	Epigenetics, Gene Organization & Expression	
AS.410.612	Human Molecular Genetics	
AS.410.613	Principles of Immunology	
AS.410.622	Molecular Basis of Pharmacology	
AS.410.633	Introduction to Bioinformatics	
AS.410.635	Bioinformatics: Tools for Genome Analysis	
AS.410.641	Clinical & Molecular Diagnostics	
AS.410.645	Biostatistics	
AS.410.652	Mammalian Cell Culture Techniques	
AS.410.659		
AS.410.709	Cancer Genomics	
AS.410.736	Genomic and Personalized Medicine	
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> The following is a list of recommended electives for the degree program. Students may select four electives from the course listings page ([https://e-catalogue.jhu.edu/course-descriptions/\\_biotechnology/](https://e-catalogue.jhu.edu/course-descriptions/_biotechnology/)).

## Learning Objectives

Graduates of the MS in Regenerative and Stem Cell Technologies program will be equipped to:

- Demonstrate laboratory-based methods to manipulate stem cells
- Assess diverse methods of regenerative and stem cell technologies and their applications
- Analyze the continuum from research-based methods to clinical applications
- Apply current FDA guidances on stem cell usage to real-world scenarios
- Analyze the early development of complex organisms
- Appraise the ethical reasoning behind the usage of stem cells in patients