

# Master of Science in Regenerative Medicine & Entrepreneurship

Information Session  
January 06, 2020

# Agenda

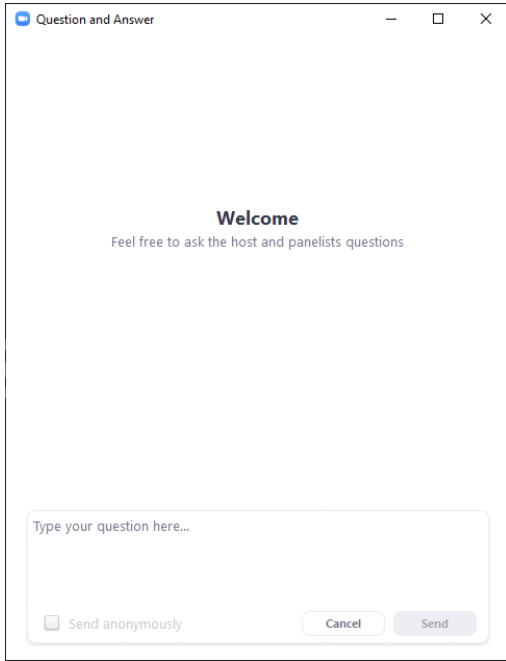
- Panel Introduction
- Program Overview
- Curriculum
- Research Opportunities
- Professional Development + Outcomes



*Jason Buitrago,  
Executive Director  
of Enrollment  
Management &  
Webinar Moderator*

- Student Experience
- Application Process
- Q&A

# Questions & Answers



The image shows a screenshot of a Zoom window titled "Question and Answer". The window has a white background and a thin grey border. At the top left, there is a blue speech bubble icon followed by the text "Question and Answer". In the center of the window, the word "Welcome" is displayed in bold, with the sentence "Feel free to ask the host and panelists questions" below it. At the bottom of the window, there is a text input field with the placeholder text "Type your question here...". Below the input field, there is a checkbox labeled "Send anonymously" which is currently unchecked. To the right of the checkbox are two buttons: "Cancel" and "Send".

Please submit any questions, using the Questions & Answers Box in Zoom.

# Panelists



*Stan Gerson, MD  
Director, National Center  
for Regenerative Medicine*



*Damian Junk, PhD  
Assistant Director of  
Cancer Training &  
Education*



*Jessica Ludwig  
Master's Degree  
Candidate*



*Lindsey Kaydo  
Master's Degree  
Candidate*

# CWRU at a Glance



**Undergraduate:**  
5,383  
**Graduate and Professional:**  
6,491  
**States represented:** 50  
**Countries represented:** 94



**Faculty (full-time, fall 2018):**  
3,550  
**Staff (full-time and part-time, fall 2018):** 3,202



**Alumni:** more than 110,000  
**Degrees Awarded:** 3,536



**Library holdings:** 4 million volumes  
**Campus size:** 267 acres in University Circle, 400-acre farm in Hunting Valley



**Operating budget:** \$1.2 billion  
**Endowment funds:** \$1.887 billion  
**Gifts and pledges:** \$182.1 million  
**Research revenues:** \$408.5 million

# CWRU School of Medicine - Research

**#24**

**in the Nation**

**#1**

**in Ohio**



# National Center for Regenerative Medicine

The National Center for Regenerative Medicine (NCRM) is a partnership among four nationally ranked, medical research powerhouses:

- Case Western Reserve University
- Cleveland Clinic.
- University Hospitals Cleveland Medical Center
- The Ohio State University.



NCRM is led by Stan Gerson, MD:

- Director, NCRM.
- Program Director of the RGME Master's program.
- RGME Student Independent Study Mentor.
- RGME Course Instructor.



# National Center for Regenerative Medicine

NCRM is a leader in:

- Stem cell and regenerative medicine research.
- Developing therapies to benefit patients.
- Compliance with Federal regulations.
- Translating research discovery into business opportunities.

Key NCRM successes:

- NCRM partner, University Hospitals, conducted the first stem cell transplant in Ohio.
- NCRM Member, Arnold Caplan, holds some of the earliest stem cell patents.
- NCRM Leadership and Members have created several private companies.
- NCRM provides Cellular Therapy Integrated Services (CTIS) to facilitate cell therapy clinical trials.
  - CTIS includes a 3,000 square foot Cellular Therapy Manufacturing laboratory with 6 state of the art cleanrooms to produce high clinical grade products.



*Arnold Caplan, PhD  
Professor,  
Department of  
Biology  
Member, NCRM*



# What is.....

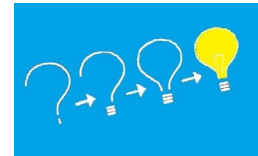
## Regenerative Medicine

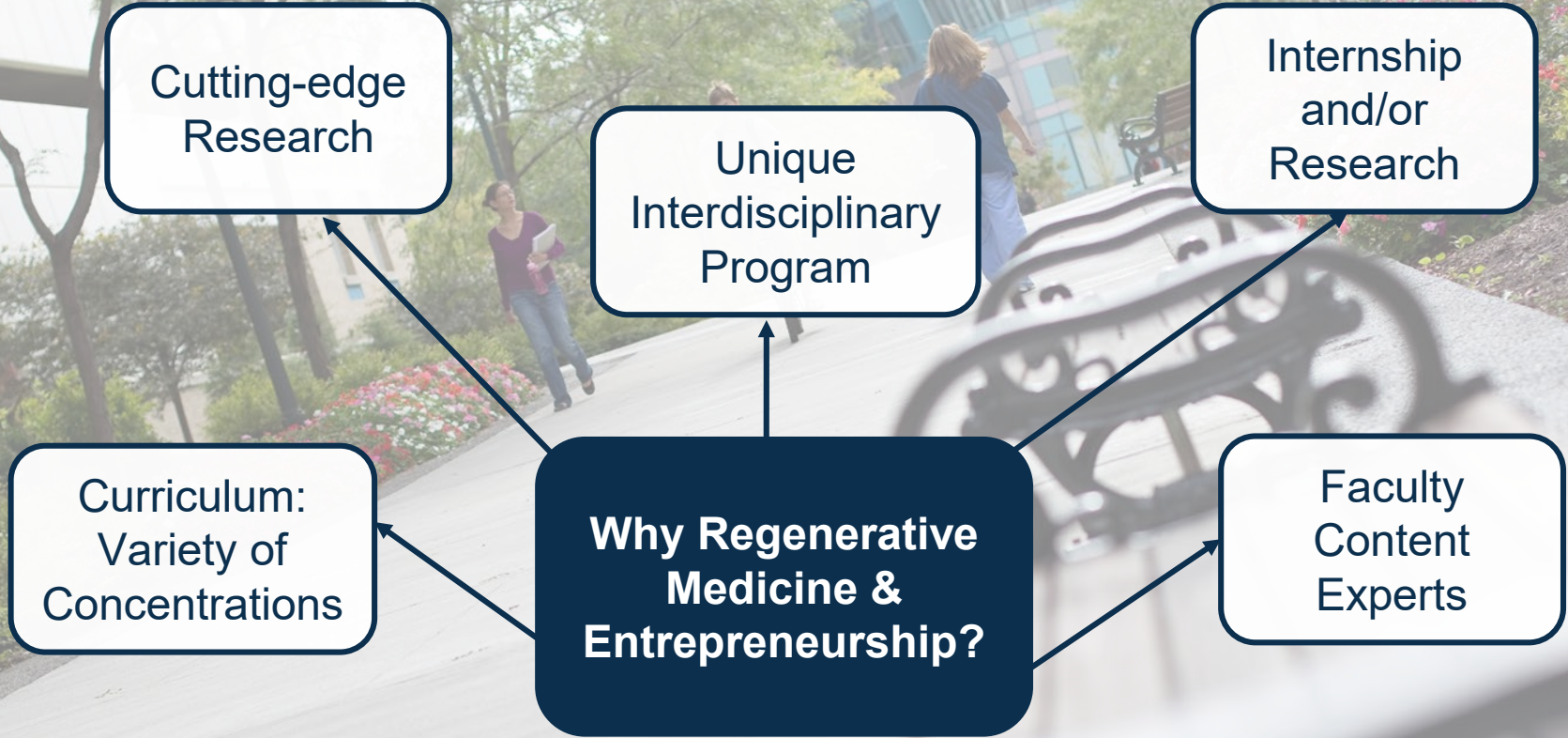
- Regenerating damaged tissue or organs of the body by stimulating them to heal themselves *or*
- Creating new cells and tissue in the laboratory to safely implant in the body when it cannot heal itself.

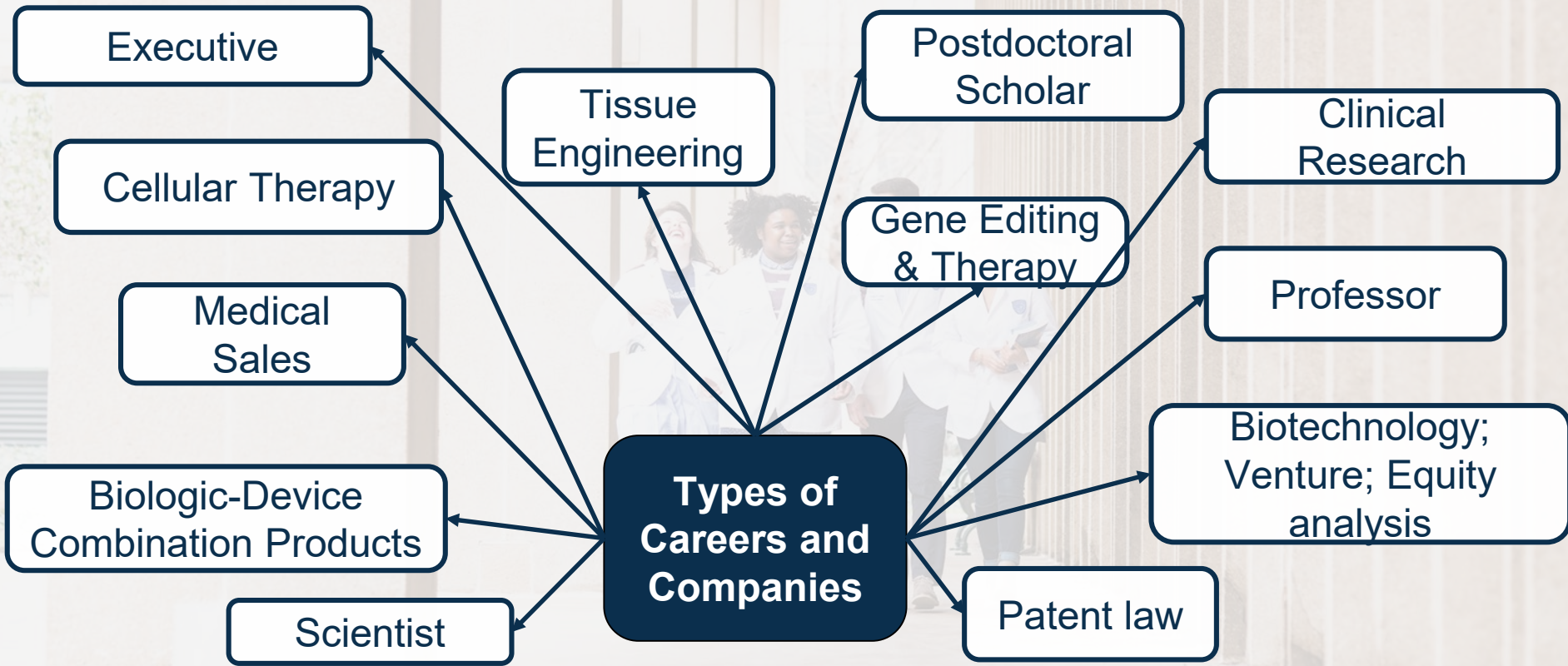


## Entrepreneurship

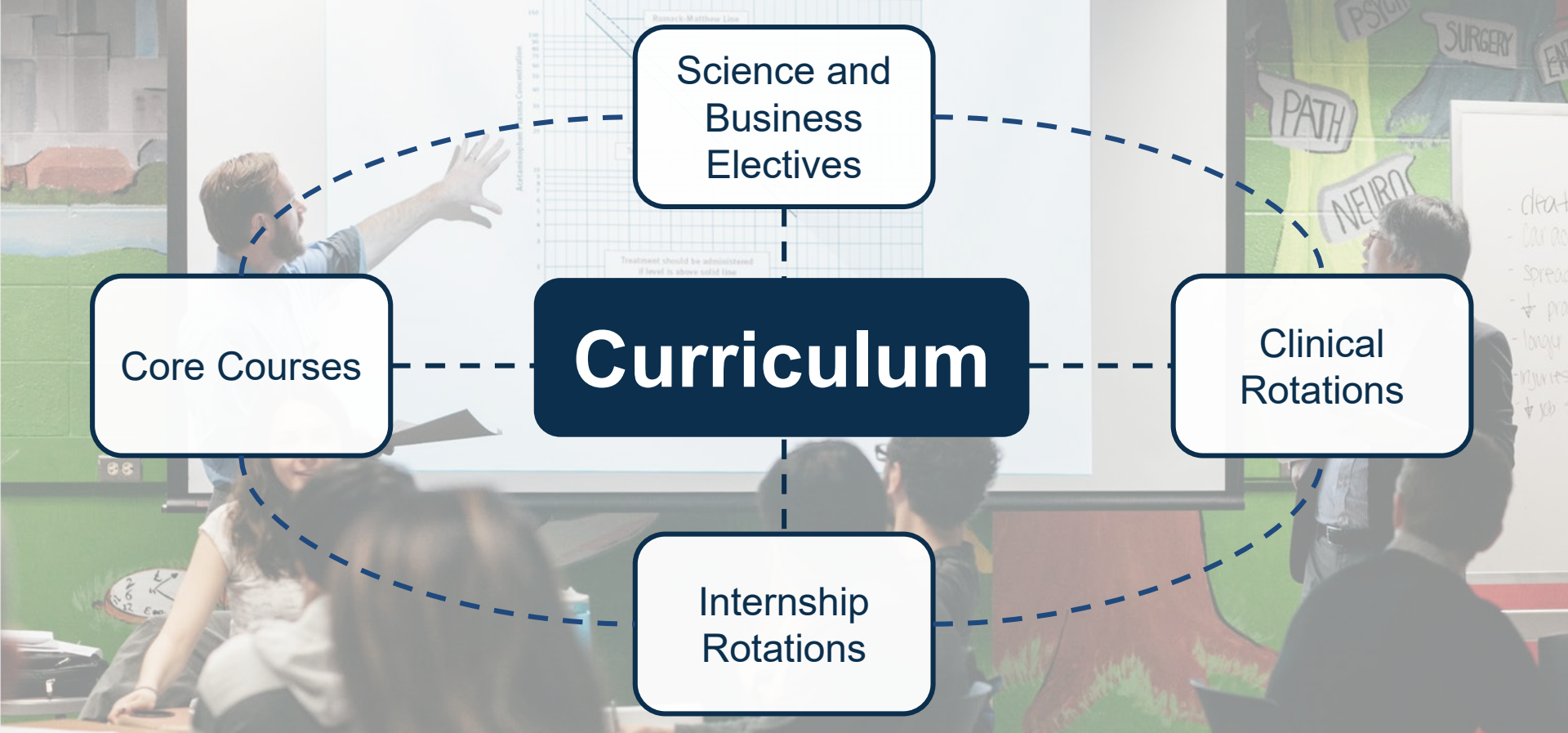
- Transforming the world by solving big problems with impactful solutions.
- Designing, launching and running a new start-up business from novel scientific discovery.
- Entrepreneurship is about execution of innovative ideas.











Core Courses

Science and Business Electives

**Curriculum**

Clinical Rotations

Internship Rotations



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CASE WESTERN RESERVE  
UNIVERSITY



NATIONAL CENTER FOR  
REGENERATIVE MEDICINE

# Curriculum

- 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.

# Coursework

## First Year

Semester	Course Code	Course Name	Credit
Fall	RGME 535	Foundations in Regenerative Medicine	3
	BIOL 491	Contemporary Biology and Biotechnology for Innovation	3
	-	Science or Business Development Elective(s)	1-6
	-	Seminars	-
Spring	RGME 545	Stem Cell Biology and Therapeutics	3
	BIOL 492	Contemporary Biology and Biotechnology for Innovation	3
	-	Science or Business Development Elective(s)	1-6

# Coursework

## Second Year

Semester	Course Code	Course Name	Credit
Fall	RGME 560 or RGME 565	Independent Study – Research Project or Internship	3
	GENE 467	Commercialization and Intellectual Property Management	3
	-	Science or Business Development Elective(s)	1-6
	-	Seminars	-
Spring	-	Science or Business Development Elective(s)	1-6



# Science Program Electives

**CLBY 450:** Cells and Pathogens

**CRSP 412:** Communication in Clinical Research – Grant Writing

**EBME 406:** Polymers in Medicine

**PATH 416:** Fundamental Immunology

**PHRM 409:** Principles of Pharmacology

**PHRM 520:** Basic Cancer Biology and the Interface with Clinical Oncology

**PHRM 525:** Topics in Cell and Molecular Pharmacology

# Business Development Program Electives

**ENTP 402:** Starting and Managing Successful Start-up

**ENTP 418:** New Enterprise Development

**IIME 450:** Technology Entrepreneurship: Market Opportunity Analysis

**IIME 450B:** Technology Entrepreneurship: Managerial Decision-Making

**LAWS 4312:** Patent Preparation and Prosecution

**LAWS 5341:** Commercialization and Intellectual Property Management

# Two Year Program

## 2020 - 2021

### Begin in Fall 2020!

- Coursework (~4 one-semester courses)
- Science Electives (~2 one-semester courses)

## 2021 - 2022

### Begin in Fall 2021!

- Coursework (~2 one-semester courses)
- Business Electives (~2 one-semester courses)

# Research and Internship Experiences

Expert faculty mentors and commercial partners to match *your unique* training goals.

- Our faculty and partners have world-class expertise with:
  - Various stem cell populations such as immune, epithelial, mesenchymal, and induced pluripotent stem cells.
  - Numerous scientific techniques such as 3-D printing, biomaterial engineering, drug delivery, tissue regeneration, and tissue supportive technologies.
  - Laws, ethical concerns, and regulations for scientific exploration, patient care, and intellectual property protection.
  - All of the steps required to translate a novel scientific discovery into a commercial product or business for patient benefit.



- Career and Internship Connections (CICs)
- Minority Graduate Student Organization
- CWRU Graduate Student Senate
- Graduate Student Mentoring

# Resources and Professional Development

- Seminars
- Research Ethics
- Presentations
- Career Development
- Networking Resources



# Student

# Experience



Jessica Ludwig



Lindsey Kaydor

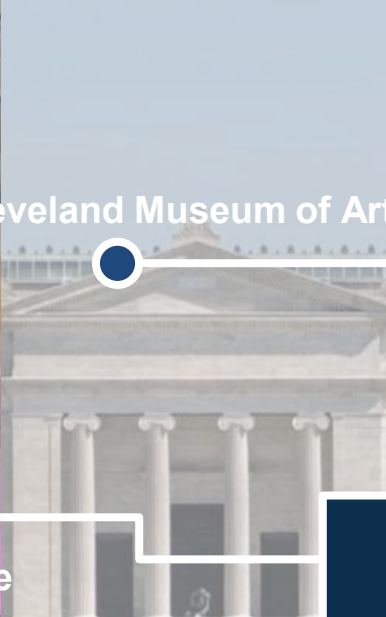


## Student Experience

- ✓ Form relationships
- ✓ Learn through working directly with faculty
- ✓ Gain experience in research and business
- ✓ Develop diverse professional skill set
- ✓ Personally interactions with faculty and peers



Playhouse Square



Cleveland Museum of Art



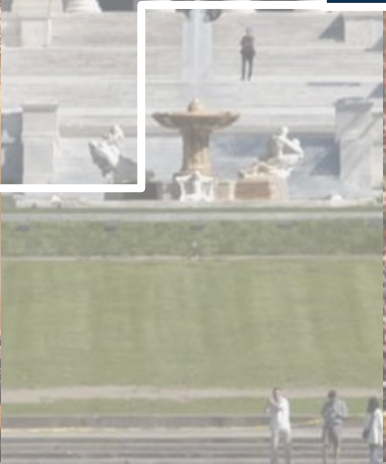
Little Italy



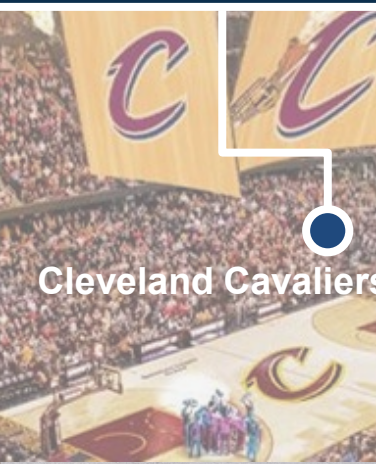
East 4th Street



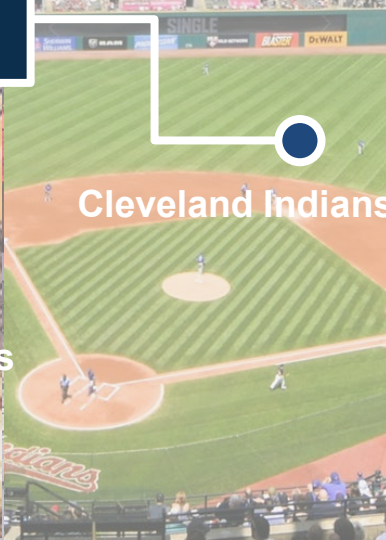
Cleveland Orchestra



# Cleveland




Cleveland Cavaliers



Cleveland Indians





Start the online application  
by visiting

[case.edu/medicine/ncrm/](https://case.edu/medicine/ncrm/)

Applications should consist of:

- The completed online application
- Transcripts of undergraduate coursework
- Personal Statement
- Resume or CV highlighting research positions
- Two letters of recommendation
- Official score from the TOEFL exam if you are applying from foreign country



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# Financial Support

Our University Financial Aid Office administers all financial aid and has comprehensive information for graduate students on their main website.

Once students are accepted into the program, they should complete the FAFSA application.

To receive federal financial aid, students must:

- Be a **US citizen** or **eligible non-citizen**
- Meet additional US Department of Education eligibility.

## Types of Aid

### **Student Loans**

For graduate students, there are three types of low-interest loans available. They include:

- Federal Direct Unsubsidized Loans
- Federal Plus Loans
- Private Loans

### **Outside Scholarships**

Students are highly encouraged to search and apply for outside scholarships. Look to outside scholarship search engines, employers, local foundations, clubs, and community scholarship opportunities. Students should notify the Office of University Financial Aid of any outside scholarships received.



**Webinar**  
Learn more information  
Visit Website  
Contact Us

Standard Application  
**Deadline: April 15, 2020**

**Fall 2020**  
Classes Begin

Early Application  
**Deadline: Jan 15, 2020**  
Visit:  
[case.edu/medicine/ncrm/](http://case.edu/medicine/ncrm/)

Priority Application  
**Deadline: March 15, 2020**  
Interview Invitations Begin

Final Application  
**Deadline: July 15, 2020**  
Final admissions decisions

# Application Timeline



# Questions?

Email: [rgme@case.edu](mailto:rgme@case.edu)

[www.case.edu/medicine/ncrm](http://www.case.edu/medicine/ncrm)



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