



MAIMONIDES ORTHOPEDIC RESEARCH EXPERIENCE (M.O.R.E.)



The Maimonides Orthopedic Research Experience was an incredible summer opportunity, combining academic lectures from experts in the field with interesting and relevant research opportunities.

– Alexander S. Imas

Maimonides Medical Center in Brooklyn, New York is one of the largest independent academic medical centers in the country. We serve a population of over 2.6 million people who speak over 73 languages. As a level 1 adult and level 2 pediatric trauma center, Maimonides treats a broad range of injuries and conditions. The diversity of patients and cases we see make Maimonides an ideal orthopedic research site.

Research is the foundation of medicine and science. And it is an integral part of the curriculum for our orthopedic surgery residency program. Through research, we further our understanding of conditions that affect our patients and the treatments we provide. The research we perform at Maimonides enables us to:

- Practice evidence-based medicine
- Improve the care we provide to our community
- Inform other areas of clinical practice

In the spring of 2020, Drs. Jack Choueka, Afshin Razi and Rushabh Vakharia developed the Maimonides Orthopedic Research Experience (M.O.R.E.) for first-year medical students interested in orthopedic surgery. The three cornerstones of the program include:

- Performing research
- Learning the fundamentals of orthopedic surgery
- Observing our orthopedic faculty in real time



As a result of the M.O.R.E. program, I feel more comfortable writing clinical manuscripts and analyzing clinical data, and I better understand the process of revising and submitting a manuscript, all while learning more about the field of orthopedics.

– Lucas Voyvodic

CURRICULUM

M.O.R.E. is offered through Maimonides' Department of Orthopedic Surgery. The goal of our 8-week summer research program is to mentor medical school students. Each week, students will spend one day in the operating room, two days in the office and two days pursuing research. Students will attend all departmental conferences, biweekly student-oriented lectures and weekly research meetings.



The collegial and comfortable environment that the M.O.R.E. team fostered allowed me to ask questions and learn from many residents and attendings not only about research writing, but also about the field of orthopedic surgery.

– Nabil Khan

AVENUE FOR RESEARCH

After completing orientation, students enrolled in the M.O.R.E. program select from various research activities, including:

- Clinical projects (database and/or data collection)
- Review papers
- Case reports

Students are paired with a peer to learn the importance of teamwork and communication. Each student will have the opportunity to produce **two** manuscripts by the end of the program: one as the first author on their own research project, and one as the second author on their partner's project.

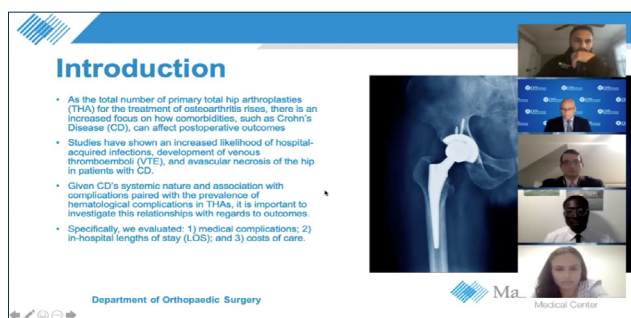
Students complete weekly assignments with their partner and participate in weekly research meetings with Dr. Razi. Students will present their research findings at the annual M.O.R.E. conference. Their presentation will be based on a completed manuscript, ready to submit to a peer-reviewed journal for publication consideration. After presenting their research, students will work with Dr. Vakharia on the manuscript submission process.



Getting to work with Dr. Razi, Dr. Vakharia and others within the Department of Orthopedics was a unique and exceptional opportunity. As mentors, they provided constant feedback and were always eager and willing to educate us. With their guidance and devotion for teaching, my research article was accepted for publication in a reputable journal.



- Brandon Amirian



First-year medical student Lucas C. Voyvodic [not pictured; class of 2023] presenting "Outcomes in Crohn's Disease Patients Undergoing Primary Total Hip Arthroplasty" at the 2020 M.O.R.E Symposium with Downstate Dean (Dr. Chuck Brunnicardi), MMC CEO (Mr. Ken Gibbs), and other members of MMC Orthopaedic Department.

2020 SUMMER PROJECTS

Student [‡]	Project Title	Journal of Submission
Bana Hadid ¹	Does Postoperative Lumbar Spine MRI Accurately Predict Clinical Infection? ¹	Spine ¹
Kyrillos Akhnoukh ¹	Does Preoperative SSRI Use Increase the Risk for Requiring Blood Transfusions Following Traumatic Hip Fractures? ¹	JOT ¹
Bana Hadid & Stefan Hamaway	Crohn's Disease Is Associated with Higher Rates of Complications and Costs Following Primary TKA	JKS
Perri Vinigan & Lucas Voyvodic	COPD Increases Risks of VTEs Within 90 Days Following Primary Total Hip Arthroplasty	JAAOS
Electra Nassis & Alexander Imas	The Effects of Alcohol Use Disorder Following Primary Reverse Shoulder Arthroplasty	JOO
Lauren Gruffi & Mohammed Sylla	How Does Alcohol Use Disorder Impact Outcomes Following Primary 1- to 2- Level Lumbar Fusion?	Spine
Brandon Amirian & Kyrillos Akhnoukh	How Does COPD Impact Perioperative Outcomes Following Primary Total Shoulder Arthroplasty?	S&E
Nabil Khan & Weston Beuhring	Higher Altitude Is Associated with Increased Infections Following Primary Total Hip Arthroplasty	JAAOS
Stefan Hamaway & Bana Hadid	Iron Deficiency Anemia Is Associated with Higher Complications Following Revision Total Knee Arthroplasty	JOA
Weston Beuhring & Nabil Khan	Patients Discharged to a Skilled Nursing Facility Following Primary Total Hip Arthroplasty Have Worse Outcomes	JOO
Lucas Voyvodic & Nabil Khan	The Impact of Crohn's Disease on Adverse Events Following Primary Total Hip Arthroplasty	JOA
Mohammed Sylla & Lauren Gruffi	The Relationship of Iron-Deficiency Anemia on Revision Total Knee Arthroplasty	JKS
Alexander Imas & Electra Nassis	Opioid Use Disorder Is Associated with Higher Complication Rates Following Primary Shoulder Arthroscopy	Arthroscopy

JKS = Journal of Knee Surgery; JAAOS = Journal of the American Academy of Orthopaedic Surgeons; JOO = Journal of Orthopaedics; JOA = Journal of Arthroplasty; S&E = Shoulder & Elbow Journal; JOT = Journal of Orthopaedic Trauma
[‡] = Displayed as the primary and secondary authors of each study
¹ = Selected as the State University of New York (SUNY) Downstate Summer Alumni Summer Research Fellowship Grant Recipient

LEARNING FUNDAMENTAL CONCEPTS IN ORTHOPEDICS

Students in the M.O.R.E. program will attend educational lectures from residents, faculty and OrthoACCESS (Ortho Acting-Intern Coordinated Clinical Education and Surgical Skills) webinars. The program also includes clinical modules such as:

- Interpreting X-rays
- Performing a concise yet thorough orthopedic physical examination
- Participating in cadaver sessions hosted by the residents to:
 - Reinforce basic science anatomy
 - Learn suture knot tying
 - Improve hand dexterity
- Other educational sessions

The lectures and modules provide invaluable exposure to academic orthopedic surgery early in each student’s medical education.

Weekly Lecture Topics

	TOPIC 1	TOPIC 2
Week 1	Orthopedic H&P	X-Ray Interpretation
Week 2	Principles of Internal Fixation	Compartment Syndrome
Week 3	Geriatric Hip Fractures	Carpal Tunnel Syndrome
Week 4	Open Fractures	Hip and Knee Arthritis
Week 5	Pediatric Supracondylar Fractures	Pediatric Forearm Fractures
Week 6	Distal Radius Fractures	Anterior Cruciate Ligament Tear
Week 7	Ankle Fractures	Rotator Cuff Injuries
Week 8	Spine Imaging: Clinical Correlations	

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It was a fantastic opportunity to develop research and writing skills as well as learn more about the field [of orthopedics] through didactics with other orthopedic surgeons at Maimonides Medical Center. The learning and research opportunities provided by the program were second to none and I am thankful to everyone in the Department of Orthopedic Surgery for their incredible mentorship.

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- Stefan Hamaway

OBSERVERSHIP OPPORTUNITIES

The most important cornerstone of the M.O.R.E. program is observation. By observing orthopedic faculty in real time, students learn to apply the principles of orthopedics in clinical settings, outpatient settings and the operating room.

Coupling theory with real-life scenarios helps students expand their research skills and orthopedic knowledge. The faculty serves as student preceptor and mentor throughout program and beyond.



M.O.R.E. DIVERSITY SCHOLARSHIP

The Department of Orthopedic Surgery offers four M.O.R.E. Diversity Scholarships for qualified women and members of underrepresented minority groups in orthopedic surgery. Scholarships are \$1,500 each and open to these eligible groups. Applicants should be between their first and second year of medical school.

Scholarship recipients will spend eight weeks this summer, in person, at Maimonides. They will complete their projects under the guidance of our research team and the attending staff of the Department of Orthopedic Surgery.

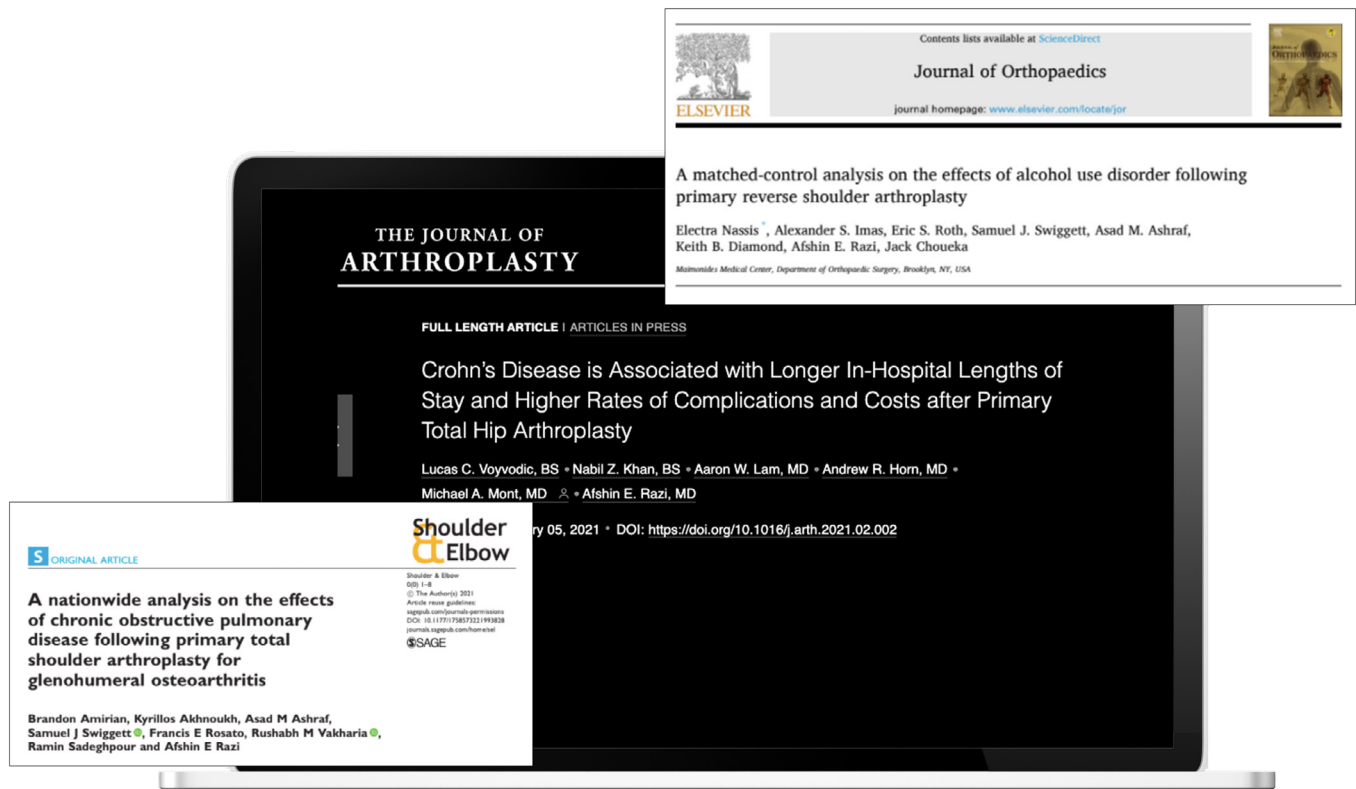
This is an amazing opportunity to get involved in research early in your career. To apply, complete the application below and send your CV, a letter of recommendation and letter of interest indicating why you should be considered for this scholarship.



Dr. Razi and Dr. Vakharia are phenomenal mentors, and they provided invaluable assistance and guidance with the research, writing and editing process. Overall, the program provided excellent exposure to orthopedics and clinical research, and it was a formative medical school experience that I would highly recommend to any student interested in pursuing research in the field.



- Lauren Gruffi



Maimonides Orthopedic Research and Education (M.O.R.E) & Diversity Scholarship Application

The M.O.R.E. summer program is available to students between their first and second year of medical school who are interested in a career in orthopedic surgery.

Directions:

1. Complete this application in its entirety.
2. Your letter of interest may be attached separately. If you are applying for the M.O.R.E Diversity Scholarship, indicate why you deserve the scholarship in this letter.
3. Include your CV.
4. If you are applying for the M.O.R.E Diversity Scholarship, include a letter of recommendation
5. Submit your application to M.O.R.E. Research Director Rushabh Vakharia, MD, at RVakharia@MaimonidesMed.org.

Part 1: Contact Information

Name (First, MI, Last): _____

Gender: Female Male Other

Address: _____

City: _____ State: _____ ZIP: _____

Phone Number: _____

Email Address: _____

Part 2: Emergency Contact Information

Contact in Case of Emergency: _____

Relation to Applicant: _____

Primary Phone Number for Emergency Contact: _____

Part 3: Academics

Medical School: _____

Address: _____

City: _____ State: _____ ZIP: _____

Orthopedic Interests (check as many as apply):

<input type="checkbox"/> Adult Reconstruction	<input type="checkbox"/> Pediatrics	<input type="checkbox"/> Trauma	<input type="checkbox"/> Hand & Upper Extremity
<input type="checkbox"/> Foot & Ankle	<input type="checkbox"/> Spine	<input type="checkbox"/> Undecided	<input type="checkbox"/> Sports

Are you interested in applying for the M.O.R.E. Diversity Scholarship?
(CV and letter of recommendation required)

Letter of Interest

In one page, explain:

- Why you are interested in this research experience
- What you hope to accomplish during this summer internship

Be specific with your expectations and the type of experience you want to have at Maimonides Medical Center. If you are applying for a Diversity Scholarship, discuss why you should be considered.