

From Lab to Clinic: Mastering Reproductive Health through the MS in Reproductive Science and Medicine Program

Lindsey N. Block¹, Lauren M. Ataman-Millhouse¹, Giulia Vigone¹, Nimra Chohan¹, Mao Soulakis², Julie Kim¹, and Francesca E. Duncan¹

¹Department of Obstetrics and Gynecology, Feinberg School of Medicine, Northwestern University, Chicago, IL, USA

²Galter Health Sciences Library & Learning Center, Feinberg School of Medicine, Northwestern University, Chicago, IL, USA

Reproductive science spans endocrinology, embryogenesis, and reproductive tract biology, informing fertility, contraception, pregnancy, and more. Despite the crucial role of reproductive health to human well-being, a shortage of trained professionals exists, emphasizing the need for continuous educational opportunities.

To support the pipeline of training in our field, the Northwestern Center for Reproductive Science (CRS) established the Master of Science in Reproductive Science and Medicine (MS-RSM) program in 2016. This program, which is based in the Feinberg School of Medicine, focuses on human reproduction and merges basic and clinical research. Now in its eighth year, the MS-RSM program has ample data to analyze the educational framework utilized in training the next generation of leaders in reproductive science and medicine.

The MS-RSM program curriculum is comprehensive and includes didactic coursework coupled with hands-on laboratory research opportunities. To provide a more personalized education opportunity that can meet various career goals, the MS-RSM program provides two tracks: thesis and non-thesis. Both tracks require the same coursework but differ in research project requirements (thesis, 1.5-year independent research; nonthesis, 6-month collaborative research project). Foundational courses cover key aspects of reproductive science, complemented by advanced topics in emerging research in reproductive science and medicine, medical management of fertility, fertility preservation and oncofertility, and human reproductive health and disease. Professional development, responsible conduct of research, and scientific communication are also requirements of the program, ensuring graduates are equipped with essential skills in research ethics and science communication. Students benefit from a supportive community within the CRS, engaging in regular events, lectures, and extracurricular activities. Additional opportunities for leadership and skill development are provided through participation in the CRS subcommittees, which are focused on events and programming, diversity, and community engagement.

Since the program's inception in 2016, 82 students have graduated and 12 are currently in the program. The student body is predominantly female (85%), with diverse domestic and international representation (88% and 12% respectively). Notably, 19% of students are URM.

MS-RSM students contribute significantly to the field through publications and conference presentations. Between September 2016-July 2023, MS-RSM trainees have published 49 papers during their time in the program, including 20 first-authors publications. These papers have been cited 430 times and the average citation per document is 8.78.

By the time of program completion, many MS-RSM graduates have secured their next positions and overall, career outcomes differ based on the chosen track. Those who complete the thesis program (45 students to date) generally pursue advanced training (44%), research (36%), clinical jobs (15%), and industry jobs (5%). For those who graduate from the nonthesis program (37 students to date), most pursue clinical jobs (53%) with an equal distribution of those who pursue industry jobs (18%), research jobs (15%), and advanced training (15%). To ensure trainees have a network of peers to mentor them through the program and as they transition into their careers, we strive to maintain connections to alumni. Many of our alumni remain actively involved via the Mentorship and Ambassador programs.

Overall, the MS-RSM program is impacting the future of the reproductive sciences field by cultivating the next generation of medical doctors, research scientists, embryologists, and clinical scholars.