

Bright minds



National MS Society fellows lead cutting-edge research, diagnosis and treatment focused on multiple sclerosis.

by Vicky Uhland

Since the National Multiple Sclerosis Society funded its first fellowship in 1955, more than 1,000 of the world's brightest minds have been focused on solving the mystery of MS.

Society research fellowships have helped postdoctoral scientists conduct cutting-edge studies, leading to the development of medications like Tysabri and Ocrevus. And the Society's clinical fellowships give young neurologists practical experience in diagnosing and treating patients with MS.

"Through the fellowship program, the Society funds experts who make breakthroughs not only today, but in the future," says Society Research Director Anna Lampe, PhD. "Society fellows continue to give back long after their fellowships end."

Over the years, MS fellows have become university professors, guiding the next generation of MS researchers. They've become program directors at institutions dedicated to MS care or are leaders in launching MS clinics.

The Society funds a variety of research fellowship programs at institutions around the country. Scientists with doctorates or medical degrees receive grants of up to five years to support advanced training in MS research, including clinical research. Currently, Lampe says

the Society is sponsoring 99 research fellows.

Clinical care fellows have completed their neurology residency programs, and are mentored by healthcare teams that specialize in MS. The Society currently sponsors 29 clinical care fellows, who receive one to three years of intensive hands-on training with MS patients, says Hope Nearhood, director of clinical training and education, advocacy and healthcare access.

MS Society fellows come from a variety of backgrounds and interests. Here's a closer look at the experiences and motivations of three of the current fellows.

A researcher unlocks the potential of a new drug

MS is prevalent enough in Australia that Shane Liddelow, PhD, first heard about the disease in grade school. In fact, he remembers participating in a readathon to raise money for MS as a child. But as an adult studying at the University of Melbourne, Liddelow wasn't focused on MS. Instead, he earned his bachelor's degree in biomedical science in 2007, followed by a doctorate in pharmacology.



Shane Liddlelow, PhD

It wasn't until he began postdoctoral training at Stanford University's Department of Neurobiology in 2012 that Liddelow gravitated toward MS research. His mentor, Ben Barres, was a leader in research of astrocytes, which are a type of cell found in the brain. Barres, Liddelow and other team members discovered that astrocytes can secrete a toxic fatty (lipid) molecule that can kill oligodendrocytes, which are the cells that make the myelin that protects nerve fibers. Fewer oligodendrocytes means less myelin, which can lead to damaged nerve fibers and MS symptoms. So, discovering this toxic lipid molecule is a big deal.

"As soon as you have a molecule, you can work out how it's produced and delivered, and how to protect the oligodendrocytes from taking it up," Liddelow says. This gives pharmacologists

a target for a drug to block these lipid molecules and potentially stop myelin erosion and the resulting MS symptoms.

“This drug could be so novel that it would be first in its class,” Liddlelow says. Much more research is needed, but “we think this finding is very compelling,” he says. “We have cautious optimism.”

Liddlelow and his team at the New York University Grossman School of Medicine’s Neuroscience Institute are currently conducting more research into the lipid molecule’s effects on not only MS, but also other neurological diseases like Parkinson’s.

Liddlelow’s five-year MS Society research fellowship is helping fund his work on a study in which mice with an MS-like disease have been genetically engineered to either not produce the lipid molecule or turn off production of the molecule. Liddlelow’s team is testing whether the mice’s motor skills improve when they don’t produce the molecule, and how blocking the molecule affects the health of oligodendrocytes. Then, they’re comparing these molecular changes in mice with samples from people with MS.

Liddlelow believes if a drug can be developed to target the molecule’s effects, it could be part of a multipronged approach to preventing and treating MS. “I don’t think for complex neurogenetic diseases there will be a single treatment or a cure, so to speak,” he says. But his research could very well be one of the keys to a cure.

Liddlelow came to the United States to conduct this type of cutting-edge research. “There are a lot of fantastic opportunities for young people to do science here, whether you’re a citizen or not,” he says.

“And all of this pioneering work I’ve been able to be involved in is seeded by the MS Society. That’s really very impressive. It’s important that there are these foundations that are able to fund research that takes more of a risk, like our research.”

A first-generation immigrant tackles healthcare disparities

One of the goals of MS Society clinical care fellowships is to expand the diversity and cultural competency of the healthcare workforce that specializes in MS. As a first-generation immigrant, Reza Mohona, MD, has personally seen the effects of healthcare disparities on people of different ethnicities and socioeconomic statuses.



Reza Mohona, MD

“My family moved to Queens [New York] from Bangladesh when I was 3 years old,” Mohona says. “They came here with nothing. My mom didn’t understand the language, and as I grew up, I noticed the health disparity. Her cares and concerns weren’t really upheld in the medical system. Then, as I began studying medicine, I noticed the disparity more and more—particularly in African Americans with MS.”

Through her MS Society clinical care fellowship at the Rhode Island Hospital MS Center, Mohona is dedicated to reducing those disparities. The Center specializes in neurological care for economically disadvantaged people, and Mohona not only works directly with those patients, but also teaches internal medicine and neurology residents and medical students about MS diagnosis and treatment in people of all backgrounds.

This isn’t Mohona’s first foray into working with underserved populations with neurological concerns. After earning her medical degree from the American University of the Caribbean in 2017, she did a neurology residency at the Ochsner Clinic Foundation in New Orleans. During her residency, she worked with patients from lower socioeconomic backgrounds and also led a research project on the differences in MS severity and outcomes in Black and white New Orleans residents—and whether those differences were influenced by socioeconomic status.

“I want to make sure all patients of all different ethnicities and socioeconomic status have the resources to improve their disease,” she says. “I see so many people who are working two or three jobs and just don’t have the time to do research or look for resources.”

Through her work with patients of different cultural and socioeconomic backgrounds, Mohona has learned how to address healthcare disparities head-on.

“For instance, if I see a patient who culturally might not be as open to discussing their problems, or who doesn’t speak English well, I will spend a little more time with them to

make sure they're well-informed, even if that means I'm staying late at the clinic," she says.

During her fellowship, Mohona is also working with Brown University faculty on research related to pharmaco-economics and underserved MS populations.

"Because of ongoing research into healthcare disparities, there's more awareness of them, and that can lead to more resources. More research shines more light," she says.

When her fellowship ends in July, Mohona hopes to continue her research while also working as an MS specialist at an academic or nonprofit MS center. Ultimately, she'd like to create a multidisciplinary MS center dedicated to equitable care for all patients.

A granddaughter searches for an MS cure

When Jessica Piché's grandmother was diagnosed with MS in the mid-1980s, there were limited treatment options. Piché, now an MD, watched as her grandmother began using a cane and then a wheelchair. For about the last 10 years of her life, Piché's grandmother was confined to her bed. She died in February 2022.

Since she was 11 years old, Piché has worked to find a cure for her grandmother's disease. First by volunteering, then she began by riding in the Bike MS: Pedal the Plains fundraiser in her hometown of Sioux Falls, South Dakota, from 2005 to 2013.



Jessica Piche, MD

"I think the best part was hearing the speakers," Piché remembers. "Some of the bike riders had MS and talked about it, and I learned about the variability of the disease. That was when the big new MS drugs were coming out."

Eager to learn more, Piché began an internship at the Massachusetts General Hospital MS Imaging Lab during the summer between her junior and senior years of college. She worked

on brain-mapping research and shadowed a doctor in his MS clinical practice. “I saw my first MS patient neurological exam, and I learned to examine the whole patient and give them lifelong care,” she says. “That internship opened my eyes to the value of clinician-researchers in MS.”

Piché earned her medical degree from the University of South Dakota in 2018, and then did her neurology residency at the University of Michigan hospital. During the 2020 Americas Committee for Treatment and Research in Multiple Sclerosis forum, she was one of only a few residents chosen to present a complicated patient case to a panel of experts.

Piché’s MS Society clinical care fellowship at the University of Michigan MS Clinic and the Ann Arbor Veterans Affairs MS clinic is designed to give her more experience not only in clinical care but also research and MS advocacy and education. She’s receiving training in grant writing and public speaking, and is presenting research at clinical and neuroradiology conferences and helping to lobby state lawmakers about MS policy decisions.

The clinical aspect of Piché’s fellowship involves six half-days a week of working with MS patients and other patients with neuroimmunological disorders. She’s learning how to recognize key signs of clinical and radiographic progression of MS and how to manage patients’ treatment. She’s also discovering how other factors affect her patients’ lives, like health insurance concerns or pregnancy.

After Piché’s year-long Society fellowship ends, she plans to go into private practice at the Minneapolis Clinic of Neurology.

“That will enable me to have a have a unique one-on-one relationship with my patients,” she says. “I want to help them understand their disease and be that extra hand to help them navigate through this big life event.”

Vicky Uhland is a writer and editor in Lafayette, Colorado.