

Novel ideas



Pilot projects focus on cutting-edge, innovative MS research.

by **Mary E. King, PhD**

Finding funding for a truly novel idea can be difficult.

Granting agencies want to know two important things before seriously considering whether to fund a proposal for multiple sclerosis research. First, does the investigator already have a good track record in MS research? And second, is the proposed study likely to succeed, which means the investigator must provide data or a published study to support the proposal? Agencies want to make sure that their investments have a high likelihood of producing useful results.

But how does an investigator get that very first grant to test a new idea and get the first bit of data? The National Multiple Sclerosis Society funds high-risk pilot grants to quickly test novel ideas and allow researchers to gather preliminary data so they can apply for longer-term funding.

Maximizing every dollar

“The Society wants to fund a variety of research, whether it be training or large or small research grants, to maximize every dollar, and to have part of its research portfolio available to take high-risk ‘moon shots,’” says Claude Schofield, PhD, director of discovery research for the Society. “Our one-year, \$40,000 pilot grants allow us to fund this type of research and see if an idea has potential.”

“The high-risk pilot grant is a very popular funding mechanism with our researchers,” Schofield says. “This gives them seed money to test out novel ideas and see if they will develop into a larger project. It attracts researchers who are already in the MS field as well as new investigators at the beginning of their careers, for whom this may be the very first grant. It also attracts experienced investigators from other related research fields who have an idea that may translate into MS research.”

Here are three pilot projects with promising results that led to larger Society grants.

1. Ovarian aging and MS progression

Researcher:

Jennifer Graves, MD, PhD, assistant professor, Department of Neurology, UCSF School of Medicine, University of California, San Francisco



Jennifer Graves, PhD, is researching how aging and hormonal changes affect the course of a woman’s MS. Photo courtesy of Jennifer Graves

The details:

Dr. Graves looked at whether “ovarian aging” might help explain the course of MS in women. Dr. Graves explains: “We know the mean age of transition from an inflammatory to a progressive phase of MS in women is around 45, conspicuously during perimenopausal changes. This is different from men, who, unfortunately, tend to progress faster and earlier in terms of disability.”

Dr. Graves received a pilot grant to measure the concentrations of anti-Müllerian hormone (AMH), a hormone whose levels in the blood decline as the ovaries age, in women with MS and in women without MS. These individuals were participating in a research study in which they were followed for 10 years, with annual examinations and MRI scans. AMH was selected for study in part because its concentration doesn't vary significantly during the menstrual cycle.

Results:

The results support Dr. Graves' hypothesis. "We found associations between AMH levels and MS severity metrics, including decreasing brain volume and worsening clinical outcomes," she says.

The success of this study led her to propose a much larger study, recently funded by the Society, to continue to study AMH in women, looking at whether it correlates with additional MRI findings and other aging markers. The new larger study also will include men using markers specific for their biologic aging, such as testosterone.

Dr. Graves emphasizes the importance of the Society's pilot grants: "It's very challenging, if not impossible, if you have a brand-new hypothesis, to go straight to larger grants. Those all require a substantial amount of pilot data and proof of concept. This pilot was absolutely critical for my ability to show evidence to support my hypothesis and to obtain larger research funding. We were also able to write a high-profile story that brought this hypothesis to the forefront both at MS research meetings and as a published paper."

2. Improving cognitive function

Researcher:

Janet Shucard, PhD, associate professor of neurology, associate director of the Division of Cognitive Neuroscience, Jacobs School of Medicine and Biomedical Sciences, the State University of New York at Buffalo, along with her colleagues David Shucard, PhD, and Thomas Covey, PhD



Can a computer-based program help improve memory in people with MS? Janet Shucard, PhD, led a study that shows cognitive improvement is possible. Photo courtesy of Janet Shucard

The details:

The team used a pilot grant from the Society to study whether a computer-based program designed to train working memory improved cognitive performance in people with MS compared to people without MS. Shucard points out that people with MS are often concerned about changes in cognitive function, including working memory. Working memory is the part of memory that provides temporary storage and processing of the information necessary for such complex cognitive tasks as language comprehension, learning and reasoning.

Results:

“The pilot study showed that people with MS did, in fact, improve, and that they improved at a similar rate as healthy control participants,” Shucard says. This improvement with training had been shown in healthy controls in the past, she emphasizes. “Our study was the first to use dense electrophysiological scalp-recorded measures of brain function that allowed us to detect changes in the brain after training in both healthy controls and in individuals with MS.”

The baseline pre-training results from the study group with MS were only slightly lower than the healthy participants, so they were representative of individuals who might benefit from early intervention to stave off later problems with cognition, Shucard explains.

Shucard had previously done similar work to examine neurocognitive deficits in working

memory in individuals with lupus, but the pilot grant allowed her to apply this approach to a new area of research: MS. “A very nice thing about the Society is that it provides a means for researchers to obtain a small amount of funding to collect data and test out a hypothesis like this. The results [from the pilot study] showed promise and led us to apply for and receive a larger grant to do a full-scale study in MS,” Shucard says.

3. Internet intervention to increase physical activity

Researcher:

Robert Motl, PhD, associate director of research, UAB/Lakeshore Research Collaborative; and professor, department of physical therapy, University of Alabama at Birmingham



Get moving! Initial results of Robert Motl’s study show that online coaching to increase physical activity can help improve quality of life in people with MS. Photo courtesy of Robert Motl

The details:

This pilot project examined the feasibility and efficacy of combining an internet-based intervention with short video-chat sessions with coaches, to increase physical activity and improve symptoms, cognition, mobility and quality of life in people with MS. Motl obtained a Society pilot grant for conducting this six-month clinical trial.

Motl and his colleagues used a website to provide participants with a great deal of information about changing behavior and increasing physical activity. “And then the second

part of [the intervention] was provided by behavioral coaches who interacted with these individuals over video conferencing,” Motl says. “The coaches really helped individuals understand what they were learning and how to apply and individualize it,” in 15 10-minute video chats. Activity was tracked with step counters, and other effects were measured with questionnaires and other assessment tools.

A control group consisted of individuals with MS who waited for six months to receive the same intervention. They completed all the same measures at the same time as the study group but before beginning the program.

Results:

The intervention not only increased physical activity but also reduced fatigue, depression, anxiety and pain, and improved quality of life, walking, cognition and body composition in the group. “This shows the potential for an intervention that increases physical activity to broadly improve many outcomes in people with MS,” Motl says.

Motl is continuing his research with a larger grant from the Society to explore the effects of the program in a much larger sample size. He hopes to learn how effective it is in a broader population of individuals with MS, and to understand how and why it works for some and not for others.

“These awards give researchers the confidence and the courage to boldly step forward to detect new approaches that can really have demonstrable effects in the lives of people with MS,” Motl says.

Mary E. King, PhD, is a freelance medical writer in Boulder, Colorado.

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