

ROCCO ORTENZIO
Neuroimaging Center

 **KESSLER**
FOUNDATION
Changing the lives of people with disabilities



Annual Report 2014

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FOUNDATION
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Inside the QR CODES



Throughout Kessler Foundation's 2014 Annual Report are QR codes, where you can find more information on grants, publications, research, and employment initiatives. To access this information, download a QR code scanner or reader app on your mobile device. Open the app and place your mobile device over the QR code. Scan the code above, or visit <http://kesslerfoundation.wix.com/2014-annual-report>, to view the online version of the annual report.

About Kessler Foundation

Kessler Foundation, a major nonprofit organization in the field of disability, is a global leader in rehabilitation research that seeks to improve cognition, mobility, and long-term outcomes, including employment, for people with neurological disabilities caused by diseases and injuries of the brain and spinal cord. Kessler Foundation leads the nation in funding innovative programs that expand opportunities for employment for people with disabilities. For more information, visit KesslerFoundation.org.

Our Vision

Kessler Foundation leads the way in linking science and grantmaking so that people with disabilities can lead more productive, independent, and fulfilling lives.

Our Mission

The mission of Kessler Foundation is to improve quality of life for people with disabilities through discovery, innovation, demonstration, application, and dissemination.

Annual Report Staff

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Rodger DeRose, president and chief executive officer of Kessler Foundation, Rocco Ortenzio, co-founder and vice chairman of Select Medical, and John DeLuca, PhD, senior vice president for Research and Training at the Foundation, attended the naming dedication of the Rocco Ortenzio Neuroimaging Center at Kessler Foundation. The naming recognizes the combined \$1.25 million pledge from the Rocco and Nancy Ortenzio Foundation and Select Medical to support Kessler Foundation's medical rehabilitation research.

2014 ANNUAL REPORT

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Dear Friends,

In 2014, Kessler Foundation celebrated a record-breaking year. We now have the capacity to change more lives than ever before, because of the overwhelming generosity of our donors and funders.

Our scientists earned \$14.7 million in research grants from federal, state, and private organizations, more than in any past year. Networks and collaborations further enhance the influence of Kessler Foundation's research. As the site of federal model systems in both brain injury and spinal cord injury, we connect with centers across the nation to improve care for people with these catastrophic injuries.

The Foundation is now home to the only center dedicated to rehabilitation research in multiple sclerosis (MS), known as the MS Collaborative Center of New Jersey, funded by a generous grant from the National Multiple Sclerosis Society. Through our recent collaboration with Children's Specialized Hospital, we are applying our expertise in a new direction—to improve the lives of children and adolescents with disabilities.

At the Rocco Ortenzio Neuroimaging Center at Kessler Foundation, our scientists continue to explore innovative ways to treat disabilities caused by MS, stroke, spinal cord injury, brain injury, and the effects of chemotherapy. Their objective evidence supports reimbursement for new treatments, accelerating the translation of scientific advances from theory to practice.

At Kessler Foundation, we view employment as a major indicator of quality of life for people with disabilities. That's why we awarded \$2.7 million in grants to expand options for this underemployed population—bringing our investment in employment initiatives to \$32 million since 2005.

To maximize impact, we support approaches like public/private partnerships and social enterprise businesses, which can provide jobs for large numbers of people. We also fund faith-based initiatives that connect people with disabilities with job opportunities in their communities.

Our mission drives us to make strategic investments that help our employees work efficiently and



effectively. Thanks to the talent and dedication of our staff and Board of Trustees, Kessler Foundation was again named one of the Best US Nonprofit Organizations to Work For and one of the Best Places to Work in New Jersey.

Thank you for working with us to change the lives of people with disabilities. We encourage you to visit KesslerFoundation.org and follow our social media channels for daily updates.

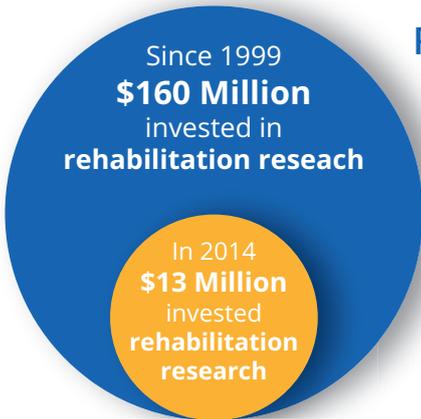
Sincerely,

Rodger DeRose
President and CEO

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AT A GLANCE

Dollars Invested in Research and Programs
to improve the lives of people with disabilities



SOCIAL MEDIA

in **15** seconds

Facebook **2K**
LIKES

twitter **3.5K**
TWEETS

YouTube **9K**
VIEWS

80K
SEARCHES

Google



400

media related pieces generated for print, online news and video, broadcast TV, podcasts, scripts, and in-house brochures.

Google Device Searches

12,000
Mobile searches

6,000
Tablet searches

63,000
Desktop searches

8

One of only 8 centers in the US with federally funded Model Systems for Spinal Cord Injury and Traumatic Brain Injury.

16

One of only 16 SCI Model System centers, the Northern NJ Spinal Cord Injury System serves 100 new patients each year and follows 1,500 with chronic SCI.

14

One of only 14 TBI Model System centers, the Northern NJ Traumatic Brain Injury System serves 80 new patients each year and follows 400 with chronic TBI.

APPLYING STRATEGIES TO BUILD EMPLOYMENT OPPORTUNITIES

"While we strive to create opportunities for the millions of Americans with disabilities, it is critical to share methods for success across the nation. As more individuals with disabilities join the workforce, they feel the satisfaction of earning a paycheck and contributing to the economy."

— Elaine E. Katz, MS, CCC-SLP, Senior Vice President of Grants and Communications

In 2014, Kessler Foundation awarded \$2.7 million in employment grants bringing the total to \$32 million distributed since 2005. Included were three Signature Employment Grants—the Foundation's largest awards—17 Community Employment Grants, and ten Special Initiative Grants.

Building Opportunities



Each month, Kessler Foundation and the University of New Hampshire Institute on Disability (UNH-IOD) distribute National Trends in Disability Employment (nTIDE), a custom report released in conjunction with the Bureau of Labor Statistics jobs report. nTIDE is authored by John O'Neill, PhD, director of Employment and Disability Research at Kessler Foundation, and Andrew Houtenville, PhD, associate professor of Economics at UNH-IOD. In 2014, the key employment indicators declined for people with disabilities; however, the initial signs of a reversal in this trend were apparent in the year's last quarter. Private funding, corporate initiatives, and federal legislation are removing barriers and increasing the hiring and retention of people with disabilities.

Finding Solutions



Researchers at Kessler Foundation are studying ways to keep people with disabilities in the workplace. Lauren Strober, PhD, senior research scientist, and her colleagues identified a measurement tool for predicting employment in people with multiple sclerosis. This enables clinicians to provide at-risk individuals with strategies for maintaining employment. Dr. O'Neill launched a survey, in collaboration with Mathematica Policy Research, to study barriers and facilitators to employment in three states. A Signature Employment Grant to the University of New Hampshire funded the "Kessler Foundation National Employment Survey on the Status of Americans with Disabilities." This nationally representative survey, the first to examine the workplace experiences of Americans with disabilities, will help legislators and policymakers expand employment opportunities.



Three organizations bestowed awards on Kessler Foundation for its leadership and commitment to improving the lives of people with disabilities – the LADACIN Network's Humanitarian Award, JVS's Community Partner Award, and the New Jersey Theater Alliance's Star Award for Outstanding Leadership.

Creating Jobs

Signature Employment Grants funded programs in Florida and Pennsylvania. A peer-run clubhouse program at ServiceSource's Florida Regional Office benefits individuals with brain injury, including veterans. United Way of Allegheny County's initiative, "21 and Able," provides businesses with embedded professionals that support the integration of young people with disabilities. Pepsi ACT, a program funded with collaborators in 2013, reported initial successes in the hiring and retention of more than 40 people with disabilities at PepsiCo call centers and distribution centers in Minnesota, Nevada, and Texas. Pepsi ACT will expand to four more states in 2015.



Building Awareness

In the media, Kessler Foundation's experts shared effective strategies for increasing employment options for people with disabilities. In the *Journal of Vocational Rehabilitation*, Katz highlighted the value of social enterprise businesses for creating jobs. The Caucus Educational Corporation broadcasted a series of TV segments on the cable show *One-on-One with Steve Adubato* that detailed successful models for creating job opportunities for people disabilities. The series featured Katz, Maureen Walliser of Hudson Community Enterprises—a New Jersey social enterprise funded by the Foundation—and Jack Fanous of The G.I. Go Fund—a Foundation grantee that connects veterans with jobs and services. At Mathematica's Policy Research Forum, Dr. O'Neill, presented, "Getting a Job, Keeping a Job: Services and Supports that Promote Employment among People with Disabilities." For the 24th Anniversary of the Americans with Disabilities Act (ADA), Rodger DeRose, president and chief executive officer, and Lauren Scrivo, senior communications specialist, shared their opinions on the importance of inclusion in the workplace in published op-eds.



2014 Employment Grants totaled \$2.7 million



Scan to view grants awarded in 2014



Scan to read more about our work in disability employment in 2014

GIVING THAT CHANGES THE LIVES OF PEOPLE WITH DISABILITIES

ACCELERATING THE PACE OF DISCOVERY

The Rocco and Nancy Ortenzio Foundation and Select Medical pledged a combined \$1.25 million. In recognition of this generosity, Kessler Foundation named its state-of-the-art imaging center the 'Rocco Ortenzio Neuroimaging Center' and celebrated with Mr. Ortenzio, Lieutenant Governor Kim Guadagno, Foundation Trustees, and other close friends on October 28, 2014. This remarkable gift enables Kessler Foundation scientists to accelerate the pace of discovery, develop improved rehabilitation interventions, and transform patient care.



Rocco Ortenzio is co-founder and vice chairman of Select Medical, the parent company of Kessler Institute for Rehabilitation. "We can all be proud of the unique partnership of Kessler Foundation, Kessler Institute for Rehabilitation, and Select Medical," he said. "I have seen how the Foundation's innovative research is applied to patient care at the Institute. [The Ortenzio Center] provides indisputable proof that a tested treatment is effective. This, in turn, helps improve the function, independence, and quality of life for millions of people living with disabilities."



HELPING PEOPLE WALK AGAIN

A generous donation enabled the Foundation to upgrade to the latest model of Ekso, a robotic exoskeleton that allows individuals with paralysis to stand and walk. Researchers are looking at how the new features of the Ekso GT can aid recovery of mobility after stroke and spinal cord injury. This advance in research capability was funded by Liz Lowenstein, chair of Kessler Foundation's Board of Trustees. "Watching someone walk for the first time after a devastating injury or stroke is a profound experience," said Ms. Lowenstein. "My husband, David, and I are passionate supporters of Kessler Foundation's robotics research, which promises ultimately to improve rehabilitative care for patients worldwide."



STROLLING 'N ROLLING

Kessler Foundation's 2014 Stroll 'N Roll was the most successful ever. Avid cyclist and brain injury survivor Daniel Mollino and his wife, Amber, rode from their home in Ringwood, NJ, to the Stroll 'N Roll starting line in Verona Park—a 25-mile journey. The ride symbolized how far Mollino has come in his recovery and recognized the role Kessler therapists and scientists played in his journey.



TRAINING THE NEXT GENERATION OF PIONEERING RESEARCHERS

A \$150,000 grant from The Hearst Foundations generously funded a two-year cognitive rehabilitation fellowship. On July 1, 2014, Silvana Lopes Costa, PhD, was named the first Hearst Fellow. Using neuroimaging, Dr. Costa studies the effects of cognitive rehabilitation in people with multiple sclerosis (MS). Her findings help refine treatments that target specific brain regions and increase a person's ability to think, learn, and remember.

"It is wonderful to hear about Dr. Costa's accomplishments," said Sarah Thompson Mishurov, program strategy manager at The Hearst Foundations. "It is clear that her passion for, and commitment to, alleviating the cognitive challenges faced by people with MS fuel her appetite to learn more, help more, and change the trajectory of their quality of life. We feel fortunate to support her work and look forward to following her progress."

KESSLER SOCIETY

Leadership gifts from Kessler Society members provide Kessler Foundation with a solid base of support. Kessler Society members propel scientific discoveries and fund innovative employment initiatives so that people with disabilities can re-imagine what's possible and realize the extraordinary. On a consistent, annual basis, these generous friends demonstrate a belief in our mission and a commitment to solidifying Kessler Foundation's role as a global leader in rehabilitation research and disability employment. Membership in the Kessler Society is extended to friends who make gifts totaling \$500 or more each year. For a complete list of 2014 donors, please scan the QR code or visit the online report.



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TRANSLATING RESEARCH TO CHANGE LIVES

"Our research team had a record-breaking year. Through our work, new treatments that maximize function and independence are benefiting the individuals who need them. Now more than ever, people with disabilities are recovering, and rejoining their communities and the workforce."

— John DeLuca, PhD, Senior Vice President for Research and Training

Translating Discoveries into Patient Care



Dr. Chiaravalloti, director of Neuropsychology & Neuroscience and TBI Research, administers the mSMT.

Research discoveries at Kessler Foundation translated into improved care for people with disabilities caused by multiple sclerosis (MS), stroke, and spinal cord injury (SCI).

An effective method for improving memory, the modified Story Memory Technique (mSMT) protocol was made available online to professionals who care for people with MS. "For optimal care, it is crucial for clinicians who care for this population to become familiar with this protocol for cognitive rehabilitation," said Nancy Chiaravalloti, PhD, who developed the protocol with funding from the National MS Society and the National Institutes of Health. This 10-session program, available in English and Spanish, uses context and imagery to aid new learning and memory in individuals with MS. Neuroimaging showed that positive effects of mSMT were still apparent six months after the program was administered. The mSMT is used in Mexico, Argentina, as well as the US. Results of mSMT testing in traumatic brain injury (TBI) will be published in 2015.



Kim Hreha, OTR, of Kessler Institute, Dr. Barrett, and Peii Chen, PhD, Foundation research scientist

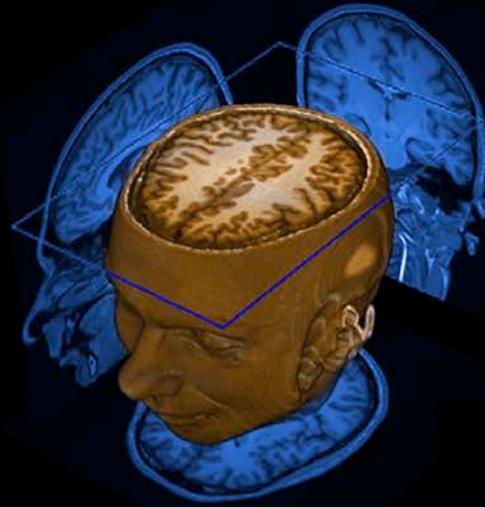
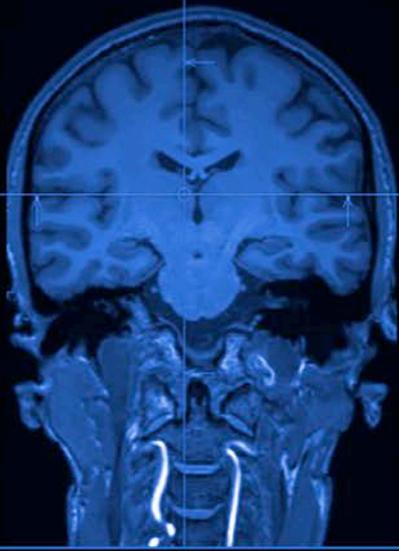
Advances were implemented in the detection and treatment of spatial neglect, a common hidden disability that hinders recovery after stroke. Funded by a grant from the Healthcare Foundation of New Jersey, researchers tested the feasibility of incorporating screening and treatment for spatial neglect into acute care. The study—the first of its kind—was conducted in the high-risk population at Newark Beth Israel Hospital. Therapists were trained to screen inpatients with the Kessler Foundation Neglect Assessment Process (KF-NAP™) and treat with the

Kessler Foundation Prism Adaptation Therapy (KF-PAT™), using a specially developed prism therapy kit. They found 135 patients with right brain stroke, and administered the KF-NAP to 78. Of the 15 patients identified with spatial neglect, 8 underwent KF-PAT during their stay. "Our findings show that stroke survivors will benefit from early screening and prompt intervention," said A.M. Barrett, MD, director of Stroke Rehabilitation Research. Training in the KF-NAP and KF-PAT will be widely available starting in 2015, via an online course.

Advances in exoskeletal research translated to the clinical use of two devices—Ekso and ReWalk—in rehabilitation. Gail Forrest, PT, PhD, led the team studying exo-assisted walking in individuals with spinal cord injury, and the potential for minimizing secondary complications like pressure ulcers, chronic pain, and loss of bone density and muscle strength. "At least 40 people have participated in our studies," said Dr. Forrest. "Nine participants have walked 100 hours in a robotic exoskeleton, each taking a total of 80,000 to 150,000 steps." Dr. Forrest is assistant director of Human Performance & Engineering Research, which is led by director Guang Yue, PhD.

40 Participants
900 Hours
150,000 Steps





Developing New Treatments through Neuroimaging

In 2014, 300 scans were performed at the Rocco Ortenzio Neuroimaging Center for 18 clinical studies aimed at developing new ways to aid recovery from disabling illness and injuries. The Center's unique neuroimaging capabilities increased our knowledge of factors that contribute to disability, such as cognitive fatigue, spatial neglect, and disorders of emotional processing, executive function, and processing speed. Scientists measured the effectiveness of interventions, such as cognitive training, exo-assisted walking, and exercise. Dr. Forrest applied neuroimaging of the spinal cord to her research on the impact of exo-assisted walking on bone and muscle. "Neuroimaging of the spinal cord is a new area," noted Brian Yao, PhD, the physicist who manages the Center.

"Kessler Foundation is one of the few facilities with such capability."

Veterans from across the nation participated in a neuroimaging study of cognitive fatigue associated with Gulf War Illness. Glenn Wylie, DPhil, associate director, leads this collaborative effort of the Foundation and the VA New Jersey Health Care System. "Preliminary findings showed brain activity patterns comparable to those seen in people with cognitive fatigue associated with MS or TBI," said Dr. Wylie. "This suggests a common 'fatigue network' in the brain, a finding that may help us develop effective treatments for this disabling condition."

Collaborative research is conducted at the Center under the leadership of John DeLuca, PhD, director.



300 scans



18 Studies



102 Research articles

5 Books/Book
Chapters published

94 Presentations

Improving Cognition through Research

Under the leadership of John DeLuca, PhD, and Nancy Chiaravalloti, PhD, researchers made advances to improve thinking, learning, and memory for individuals with MS, TBI, and other neurological conditions.

Lauren Strober, PhD, of Kessler Foundation, collaborated with the Cleveland Clinic on a long-term follow-up study of the course of cognition in MS—important information for researchers in this field. Over 18 years, significant declines were found in information processing speed, auditory attention, memory, episodic learning, and visual construction.

MS researchers, including Joshua Sandry, PhD, a post-doctoral fellow, investigated working memory, which is essential for complex cognitive tasks. Researchers found that during working memory

tasks, brain activation patterns differ in people with MS and that working memory contributes to cognitive reserve in this population. In another long-term study led by James Sumowski, PhD, researchers found that intellectual enrichment and brain reserve, or brain volume, protected against cognitive decline in MS at 4 1/2-year follow-up. In other studies, task length was found to be the major factor associated with cognitive fatigue, and self-generated learning significantly improved learning and memory in MS. In the area of sleep research, scientists completed a pilot study of the efficacy of Rozerem, (ramelteon). According to Anthony Lequerica, PhD, results supported efficacy for sleep disturbances post-TBI that hinder rehabilitation and recovery.

New Beginnings in Rehabilitation Research

Kessler Foundation, a leader in training rehabilitation researchers, hosted 14 postdoctoral fellows in 2014. Dr. DeLuca heads the fellowship program, which attracts young professionals from here and abroad. In 2014, new partners joined in supporting our fellowship training, including The Hearst Foundations and Children's Specialized Research Foundation.

The Foundation formed a new collaboration in 2014, bringing expertise in rehabilitation research to the Children's Specialized Hospital Research Center. Dr. Chiaravalloti and post-doctoral fellow Julia Coyne, PhD, received initial grant funding of \$250,000 to study memory in children and adolescents with TBI. Four research scientists, supported by three fellows, are spearheading projects in neuropsychology, bioengineering, biomechanics, and education aimed at improving outcomes in children with brain injury, SCI, cerebral palsy, and autism.



Photo Courtesy: Children's Specialized Hospital



Improving Mobility through Research



Led by directors Trevor Dyson-Hudson, MD, and Guang Yue, PhD, Kessler Foundation expanded its work to improve mobility and health of people with disabilities. Scientists reported results of their exoskeletal research in SCI, which is overseen by Dr. Forrest in the Foundation's Gait Lab. At the 2014 World Congress of Biomechanics, Kessler Foundation reported that individuals with incomplete and complete SCI actively increased muscle activation, step swing time, stride length, and hip extension after walking in Ekso. In addition, the Foundation acquired a second Ekso GT for a stroke research study being conducted with inpatients at Kessler Institute by Karen Nolan, PhD, and Mooyeon Oh-Park, MD. Kessler Foundation expanded its exoskeletal research, joining a new multi-center study of the effects of Indego, a new exoskeleton from Parker-Hannifin, in individuals with SCI.



Scan to learn more about our research.



Scan to view research grants received in 2104.



Scan to view 2014 research publications.

Translating Knowledge to Improve Outcomes – the Model Systems

Kessler Foundation is one of eight centers in the US with dual model systems in SCI and TBI. Federally funded by the National Institute on Disability, Independent Living & Rehabilitation Research (NIDILRR), Model Systems are networks of coordinated care and research that conduct in-depth collaborative studies aimed at improving rehabilitation and fostering community participation and employment.

"Through the model system, we share our research findings for the benefit of the people with SCI living in our community," said Dr. Dyson-Hudson, co-director of the Northern New Jersey Spinal Cord Injury System (NNJSCIS). "In 2014, 120 consumers attended our successful conference, 'Rising to the Challenge: Creating Employment and Maximizing Success.' We distributed 5,000 copies of Connections, our consumer newsletter, engaged with the community through our SCIRehabResearch page on Facebook, and welcomed hundreds to our informative series of SCI Grand Rounds." NNJSCIS, one

of 14 SCI model systems in the US, is a collaborative effort of Kessler Foundation, Kessler Institute, and Rutgers, The State University of New Jersey. Dr. Dyson-Hudson co-directs the NNJSCIS with Steven Kirshblum, MD, medical director of Kessler Institute for Rehabilitation.

The Northern New Jersey Traumatic Brain Injury System (NNJT BIS) ended 2014 with a milestone—the enrollment of its 500th research participant. "I want to thank all of the wonderful individuals with TBI who contributed their time to help find new ways to improve life after brain injury," said Dr. Chiaravalloti, project director of the NNJT BIS. "We connected with thousands of consumers, caregivers, and collaborators through our newsletter, *TBI News & Views*, and our TBI Research page on Facebook." NNJT BIS, one of 16 TBI model systems in the US, is a collaborative effort of Kessler Foundation, Kessler Institute, University Hospital, St. Joseph's Regional Medical Center, Morristown Memorial Hospital, and Hackensack University Medical Center.



Researchers developed comics as a way to communicate health information to individuals with TBI living in the community.



The North Jersey Navigators—an adaptive sports team for junior athletes with disabilities—received the Ted Kaplan Exemplary Recreation Group Award from the New Jersey Commission on Recreation for Individuals with Disabilities. The Navigators also set new records at the 2014 National Junior Disability Championships, netting 131 medals. Kessler Foundation has supported the Navigators since 2008.

KESSLER FOUNDATION—IN THE NEWS

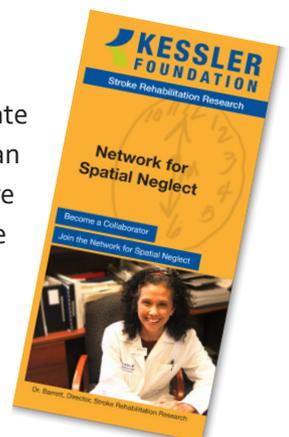


John DeLuca, PhD, senior vice president for Research and Training, was named principal investigator of a major MS Collaborative Research Center Award from the National Multiple Sclerosis Society. “Our goal is to conduct new and innovative rehabilitation research and expand professional training in this unique area, leading to discoveries that become part of tomorrow’s treatment for persons with multiple sclerosis,” said Dr. DeLuca. The Center is unique in its focus on rehabilitative research that explores the interactions of cognition and mobility.

Kessler Foundation and Kessler Institute for Rehabilitation received funding to participate in the National Institutes of Health’s Stroke Trials Network (NIH StrokeNet) through an affiliation with Columbia University. NIH StrokeNet investigators from 25 centers are identifying priorities for research protocols and providing training opportunities for the future generation of researchers.



Elaine E. Katz, MS, CCC-SLP, senior vice president of Grants & Communications, took a month-long sabbatical to learn how Asian countries use social enterprises to create employment options for people with disabilities.





Alexandre Dupont, 28, of Quebec, Canada, won the Men's Open division in the 14th Annual Kessler Foundation Wheelchair 10K—the wheelchair division of the Fred d'Elia Ridgewood Run. Twenty-three racers represented six countries in the 10K. Racers competed for a total purse of \$10,000.



Walk Away from No

Kessler Foundation released a nationwide public service announcement (PSA), "Walk Away from No," available in English and Spanish. The PSA features a man getting out of his wheelchair and walking with the help of Ekso—a robotic, battery-powered exoskeleton.



Senator Cory Booker (D-NJ) toured Kessler Foundation and Kessler Institute for Rehabilitation to learn the latest updates in rehabilitation research, patient care, and employment funding strategies that are improving the quality of life of people with disabilities.



Kessler Foundation was again named one of the Best Places to Work in New Jersey by NJBIZ and one of the Best US Nonprofit Organizations to Work for by *The Nonprofit Times* and Best Companies Group.



Scan to read more
In the News.

Brooke Ellison, PhD, director of Education and Ethics at Stony Brook University Stem Cell Research Center, received the 2014 Kessler Foundation Neurorehabilitation Award. Since her paralyzing injury 24 years ago, Dr. Ellison has been an advocate for people with spinal cord injury and other mobility challenges.



Nancy Chiaravalloti, PhD, director of Traumatic Brain Injury and Neuropsychology & Neuroscience Research, was named the 63rd Mendel Lecturer by Saint Peter's University. She also received the Alumni Achievement in Science Award from her alma mater, Muhlenberg College.



CBS Newspath captured the story of 30-year-old Dez Duru, who was counting the days to her winter wedding when she had a stroke in May. Dez was filmed while using the Ekso GT, which researchers are studying in stroke survivors during inpatient rehabilitation. The story aired on more than 30 CBS stations across the US.

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CHANGING THE LIVES OF PEOPLE WITH DISABILITIES

through research in stroke, brain injury, multiple sclerosis, and spinal cord injury and by funding innovative programs that promote employment for people with disabilities.

