Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.

- Margaret Mead

I am happy to report to you that our small group of thoughtful, committed citizens is changing the world of CMT. In 2015, the Charcot-Marie-Tooth Association saw improvement in every meaningful metric in our march toward a first treatment for CMT. Along the way, we also provided help to increase the quality of life for the people who have it!

Together, we raised $3,799,969 in 2015, another record for the third year straight and up more than half a million dollars from the previous year. Where did that money come from? Community members taking action. The branches led the charge as more than 500 people participated in the first-ever All-Star event in September, walking, rolling, running and biking “4CMT” and raising $218,000 in the process. The CMTA branch system, which grew to 77 branches by year’s end, didn’t limit its efforts to Awareness Month thought. All in, CMTA branches contributed an astounding total of $624,373 to the CMTA and STAR in 2015. CMTA board members also got in on the fundraising efforts—just four board events contributed almost half a million dollars to CMTA coffers.

Another $1.2 million came from the efforts of two generous donors, who recognized that funds were needed as CMT 1A research efforts moved closer to clinical trials. They understood that projects were needed to determine how to quickly measure clinical improvements, how to determine why people with CMT 1A have varying symptoms, even in the same family, and how to identify the most promising compounds for testing. They challenged the CMT community to match their donations and fund that work. Each time, community members answered the call.

Where did the money go? In 2015, the CMTA spent some $2.1 million on translational projects focused on CMT 1A, 2A, 1B, 2E, 1X, and 4 that cover more than 90 percent of CMT cases. The CMTA collaborated with several pharmaceutical companies that have bought into the CMTA’s STAR consortium model in our search for a first drug to treat patients. Newly 2.5 million compounds have now been screened and testing on the resulting hits is ongoing. CMT Centers of Excellence, subsidized by the CMTA, NIH, and MDA, now number 21 globally, providing multidisciplinary touch points for CMT patients and their families under one roof.

The CMTA also allocated resources in 2015 to continue identifying the exploding numbers of CMTA patients. Our goal is to identify as many CMT patients as possible, as well as the type of CMT that affects them.

My gratitude goes to all members of our invested and committed group—our donors, the seven-person staff of the CMTA, our 77 branch leaders, the invested and voluntary Board of Directors, active Advisory Board members, and dedicated STAR Scientific Board and Therapy Board members. Their valuable and treasured participation and contributions made 2015 a remarkable and record year! Together we can achieve a world without CMT.

Patrick A. Livney
Chief Executive Officer
CMT1A

CMT1B

CMT1X

CMT2A

CMT2E

CMT4

The Strategy to Accelerate Research (STAR)
The CMTA is aggressively fighting to find a pharmaceutical treatment, and, ultimately, a cure for all types of CMT. We currently have protocols for developing treatments for the types of CMT that affect approximately 90 percent of all people with CMT. The chart below shows the status of each of those projects.

**CMT1A**
- **CMT1A** is caused by duplication of the Peripheral Myelin Protein 22 (PMP22) gene, which leads to the demyelination of the peripheral nerves. Our partnership with Genzyme, a Sanofi company, has identified a handful of compound series for treating CMT1A. Additionally, five other pharmaceutical companies are in early testing of compounds believed to have positive effects on CMT1A. We have improved the process for transforming adult human stem cells into Schwann cells (the cells that make myelin), preparing for a human cell assay. Laboratory models continue to reproduce robustly and the clinical data base is expanding. Together, the STAR team will forge ahead into preparing for clinical trials for CMT1A.

**CMT1B**
- Innovative work at the University of Iowa and the National Institutes of Health is underway to determine the role of Myelin Protein Zero (MPZ) in causing CMT1B. Through the work of Dr. Brittany Wright at the NIH, three cellular assays and laboratory models are under development, and adult stem cell development is underway. In addition, a further effort to develop animal models of CMT1B is now underway at the University at Buffalo.

**CMT2A**
- Dr. Rudolph Martini at the University of Würzburg, Germany, has been investigating whether human mesenchymal stem cells can ameliorate the neuropathy in a genetically authentic rodent model of CMTX. This is a novel type of treatment for CMT as it seeks to modify the immune system to improve nerve function. His laboratory has also tested in this model two mutations. Characterization of the models is underway and when complete will be poised to test potential compounds.

**CMT2E**
- CMT2E is caused by dominant mutations in the neurofilament light protein (NEFL). One result of the mutations is to prevent the neurofilament light proteins from assembling properly, resulting in the formation of aggregates or abnormal filaments. A team of 15 experts is being assembled to develop a pathway toward drug discovery. STAR’s first Type 4 project has been approved and is being documented for takeoff.

**CMT1X**
- **CMT1X** is caused by an X-linked dominant mutation in the NF1 gene, which leads to the demyelination of the peripheral nerves. The National Institutes of Health (NIH) is currently funding a Phase 2 trial investigating the effect of the drug idebenone on CMT1X. The trial was opened at the University of Washington, Seattle, in 2014. Type 1X affects approximately 90 percent of all people with CMT. The chart below shows the status of each of those projects.

**CMT4**
- **CMT4** is caused by an inherited mutation in the Myelin Protein Zero (MPZ) gene, which leads to the demyelination of the peripheral nerves. The National Institutes of Health (NIH) is currently funding a Phase 2 trial investigating the effect of the drug idebenone on CMT4. The trial was opened at the University of Washington, Seattle, in 2014. Type 4 affects approximately 90 percent of all people with CMT. The chart below shows the status of each of those projects.
The Scientific Advisory Board provides scientific input for projects that are ongoing or proposed. The members are:

- John Sorenson, PhD, Chair, University of Wisconsin
- Frank Baas, MD, PhD, University of Amsterdam, the Netherlands
- Robert H. Baloh, MD, PhD, Cedars-Sinai Medical Center
- M. Laura Feltri, MD, University at Buffalo
- Jun Li, MD, PhD, Vanderbilt University
- Rudolph Martin, PhD, University of Würzburg, Germany
- Albee Messing, VMD, PhD, University of Wisconsin
- Klaus-Armin Nave, PhD, Max Planck Institute for Experimental Medicine, University of Göttingen, Germany
- Brian Popko, MD, University of Chicago
- Mario Saporta, MD, PhD, University of Miami
- Steven S. Scherer, MD, PhD, University of Pennsylvania
- Michael E. Shy, MD, University of Iowa
- Gabsang Lee, PhD, Johns Hopkins University
- Lawrence Wrabetz, MD, University at Buffalo
- Stephan Züchner, MD, PhD, University of Miami

The Therapy Expert Board is responsible for ensuring that each research project has translational value for the CMTA’s STAR mission of developing therapeutics for CMT patients. The members are:

- Mark Scheideler, PhD, Chair, HumanFirst Therapeutics LLC
- Lars J. Knutsen, PhD, Discovery Pharma Consulting LLC
- Claes Wahlestedt, MD, PhD, University of Miami
- Tage Honore, PhD, Aestus Therapeutics Inc.

Addex Therapeutics is collaborating with the CMTA to evaluate the efficacy of ADX71441 as a pharmacological agent in preclinical neurological and behavioral models of CMT1A and to assess its potential to impede the development of motor and sensory control defects associated with normal disease progression.

Genzyme, a Sanofi company, is collaborating with STAR investigators to leverage the Sanofi U.S. high-throughput screening facility in Tucson, Arizona. The first round of screening, which included compound libraries with more than 2 million small molecules, has been completed and additional screening is underway.

Ionis Pharmaceuticals is the leading company in antisense drug discovery and development, and is working with the CMTA to exploit a novel drug discovery platform that provides a direct route from genomics to drugs.

The NIH Molecular Libraries Program provided its complete library of 500,000 compounds for screening. The first round of screening has been completed and further testing of selected compounds in both rodent and stem cell models has begun.

The New York Stem Cell Foundation collaborated with the CMTA to develop a bank of induced pluripotent stem cell (iPSC) lines for a variety of neuropathy disorders of known genetic causation.

Pfizer-Neusentis provided a selected subset of the Pfizer Chemogenomic library for screening in the CMT1A project. The CMTA has completed screening several thousand of these compounds. A number of potential drug targets that regulate PMP22 expression were identified and are being further validated.

PsychoGenics, a leader in specialty preclinical contract research and drug discovery services, provides biomarker and behavioral testing support to the STAR network.

ReNovo Neural is a leading specialized service company that provides expert histological and pathological analysis for animal models of neurological disease. They support the CMTA via the characterization of new animal models of CMT and by evaluating the effects of experimental drug treatment in these models.
CMT branches are the main touchpoint between the national organization and its members: The CMTA provides members education and support and members raise funds and awareness for the parent organization.

At the beginning of 2015, we renamed our Support and Action Groups CMTA Branches in recognition of the vital and organic role they play in furthering our mission. By year’s end, there were 77 branches providing help and hope to members who met regularly to share their own personal experiences and hear from leading clinicians and scientists provided as guest speakers by the CMTA.

The branches also raised awareness and funds for the CMTA. Awareness Month 2015 was the biggest ever. More than 500 people participated in 34 All-Star events in September, walking, rolling, running and being “4CMT” and raising an amazing $218,000 in the process.

In addition to the All-Star events, a record 28 states proclaimed September 2015 CMT Awareness Month, as did scores of cities and counties. Thirty people signed up to “Go Blue 4 CMT,” dyeing their hair and raising more than $20,000 for the CMTA. Community members also came up with other creative ways to raise awareness about CMT. They decorated cakes, wrapped trees in blue ribbon and put the letters “CMT” up in lights to all to see.

Community members held a number of other fundraisers and events throughout 2015, proving that anything—a birthday party, a fishing tournament, or a volleyball game—can be turned into a fundraiser.

Pete and Debbie McHugh used the occasion of Pete’s 70th birthday to raise money for the CMTA. Pete wanted to do something special for their 11-year-old granddaughter Lucy, who was the first in their family to be diagnosed with CMT. The whole family pitched in and with the matching fund donation, Pete’s birthday raised more than $10,000. “Expect more events like from our family and friends,” Debbie said afterward. “It’s an easy and fun way to increase awareness and support the important work of the CMTA.”

Sam Houston State University hosted its first-ever CMT Awareness Night during the Women’s Volleyball Team’s home game in honor of 7-year-old Boston Gray, Coach Gray’s grandson, who has CMT. CMTA STARs were sold throughout the town, campus and the night of the event for $10 each, proving that anything—a birthday party, a fishing tournament, or a volleyball game—can be turned into a fundraiser.

In Matlacha, Florida, Ellen Eagle teamed up with Little Caesars franchise owners Jim and Maralisa Addis for the 2nd Annual CMTA Shark Fishing Tournament on September 19. Ellen, her son Joel Lodolce and her sister Patty Bolton started the tournament because they all have CMT and recognize just how crucial funding the research is. Ellen was scouring the community for sponsors— and last almost reached the end of her rope—when she reached out to the local Little Caesars. The request hit home for Jim and Maralisa: “Unbeknownst to Ellen, CMT touches three generations of the Addis family. The tournament, raffle and silent auction raised $8,604 and at the close of the afternoon, the Addis family presented the CMTA with a $10,000 check from Little Caesars, family and friends.

All in, CMTA branches contributed an astounding total of $624,373 to the CMTA and STAR in 2015.

Seven Patient/Family Conferences in 2015

The Charcot-Marie-Tooth Association is all about making connections—between patients and doctors, among the doctors and researchers who do the vital research on a treatment for CMT, and between patients and other patients. Nowhere is this more evident than in the Patient/Family Conferences the CMTA holds each year, often in collaboration with a CMT Center of Excellence or multi-disciplinary CMT clinic. These conferences allow people with CMT and their families to get up-to-date information on the CMTA’s Strategy to Accelerate Research (STAR) from the scientists leading the effort to find treatments for CMT. They also feature presentations from local clinicians and health care providers on topics such as the causes and diagnosis of CMT, physical and occupational therapy, orthotics and bracing, orthopedic surgery, genetic counseling and more. Just as importantly, the Patient/Family Conferences allow people who have CMT to connect with other people who have CMT, some of them for the first time in their lives.

In 2015, the CMTA hosted a record seven Patient/Family conferences—all in collaboration with Massachusetts General in Boston and Vanderbilt in Nashville and half days in Los Angeles, Charlotte, Dallas, Denver and Chicago. More than 700 people heard presentations by experts in a wide range of medical disciplines, CMT advocates and motivational speakers. The two full-day conferences also included youth outings—an amphibious “duck tour” of Boston and The Escape Game in Nashville.

To find a branch in your area: www.cmtausa.org/branch
“1 in 2,500.” The resulting photos were each taken to Facebook in September to proudly proclaim to the world that each was “1 in 2,500.” The resulting photos were each taken to Facebook in September to proudly proclaim to the world that each was “1 in 2,500.” The resulting photos were each taken to Facebook in September to proudly proclaim to the world that each was “1 in 2,500.” The resulting photos were each taken to Facebook in September to proudly proclaim to the world that each was “1 in 2,500.”

Our Facebook community has grown to more than 25,000 followers (up from 20,000 in 2014) who take part in a constant stream of conversation, posting hundreds of comments daily.

In addition, the CMTA has 2,100 Twitter followers; 1,500 Pinterest followers; and 400 LinkedIn professionals. In the summer of 2015, an intern started an Instagram account to help the CMTA reach a younger demographic and it now has 425 followers.

And in an online Awareness Month campaign, more than 700 people took to Facebook in September to proudly proclaim to the world that each was “1 in 2,500.” The resulting photos were gathered in a huge album that illustrates that community members truly are one big family, connected to one another and committed to finding a solution to CMT together (on.fb.me/1gSRi2D).

The CMTA’s online community continued to grow and thrive in 2015, adding members, services and media. We launched a new website in 2015 (with a new, user-friendly Resource Center) that includes a revamped, private Emotional Support Group moderated by a psychotherapist with CMT.

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Members of the CMTA Advisory Board bring both expertise and empathy to assisting people with CMT in dealing with some of the critical issues facing them, whether it's finding the most suitable orthotics, the best balance exercises or tips on how to talk about CMT. They also write articles for The CMTA Report, participate in monthly webinars and assist CMTA members who have questions in areas in which they would be considered “experts.” The Advisory Board is led and coordinated by CMTA board member Elizabeth Ouellette.

The CMTA welcomed two new Advisory Board members in 2015. Sabrina Paganoni, MD, PhD, is an assistant professor at Harvard Medical School whose clinical and research activities relate to neuromuscular medicine and clinical neurophysiology. Amy Warfield, PT, DPT, NCS, is a physical therapist at the MedStar National Rehabilitation Hospital in Washington, D.C.

Jonah Berger – Business Owner, The Rhythm Within
Gregory Carter, MD, MS – Physiatrist
Bob DeRosa – Marketing/Creative Consultant
Katy Eichinger, PT, DPT, NCS – Physical Therapist
Tim Estilow, OTR/L – Occupational Therapist
Shawna Feely, MS, CGC – Genetic Counselor
Sarah Keaty, MA – Special Educator
Sean McKale, OC, LO – Orthotist
Bethany Meloche – Youth Director
David Misener, BSc, CPO, MBA – Orthotist
Elizabeth Misener, PhD, LMSW – Social Worker
James Nussbaum, PT, PhD, SCS, EMT – Physical Therapist
Sabrina Paganoni, MD, PhD – Physiatrist
Glenn Pfeffer, MD – Orthopedic Surgeon
Greg Sillwell, DPM – Board Certified Podiatrist
Carly Siskind, MS, CGC – Genetic Counselor
David Tannenbaum, LCSW – Psychotherapist
Amy Warfield, PT, DPT, NCS – Physical Therapist

Aetrex Worldwide, Inc., founded in 1946, is a global leader in pedorthic footwear and orthotics. It offers attractive shoes that feature extra depth and width to accommodate in-shoe orthotics or AFOs.

Allard, USA distributes the ToeOFF Family of carbon composite devices designed specifically to assist with foot drop, ankle instability and proximal neuromuscular weakness, all symptoms of CMT.

Balance Walking is an all-encompassing health and fitness program incorporating walking poles that can be done in as little as 15 minutes per day.

CosySoles makes microwave heated slippers that provide comforting warmth and the freedom to stay mobile to millions who suffer from cold and painful feet caused by peripheral neuropathy.

GeneDx launched the Hereditary Neuropathy Panel, a genetic testing panel aimed specifically at testing for different types of CMT, in 2014. With 53 CMT-causing genes available in the Neuropathy Panel, GeneDx delivers an exact genetic diagnosis for 50-70 percent of people with symptoms of CMT.

Hanger Clinic has more than 1,300 clinicians specializing in the provision of orthotic and prosthetic solutions. Its teams annually deliver effective clinical systems, innovative technologies and outstanding customer service to more than 1 million patients at over 750 Hanger Clinic locations nationwide.

Invitae is a genetic testing company with a comprehensive panel for CMT, as well as autosomal dominant, autosomal recessive, X-linked and HNPP (Hereditary Neuropathy with Liability to Pressure Palsies) panels.

Union & Fifth raises money for non-profits by selling donated, gently worn women’s designer clothes.
Two donors challenged the CMT community to match their donations in 2015. Each time, community members answered the call.

In a summer campaign, one CMTA family’s generous friend challenged the CMT community to match his $500,000 donation to the CMTA’s STAR program for CMT1A. The community came through.

In a “Thanksgiving Match,” another generous family donated $100,000 to the CMTA1A program on the condition that it be matched dollar for dollar during the month of November. As the family said in their message to the community: “November is the month of Thanksgiving and those of us who daily live with CMT do, indeed, have much for which to be grateful. Even when we are tired, in pain, discouraged and feeling alone, there are scores of scientists around the world diligently working on our behalf, focused on finding a treatment for CMT.”
Grew revenues from $3,153,002 in 2014 to $3,799,969 in 2015

Grew CMTA branches to 77

Grew Facebook fans by 25 percent, from 20,000 in 2014 to 25,000 in 2015

Increased total web site visits from 298,986 in 2014 to 314,205 in 2015, 32.4 percent of them new visitors

Increased research funding from $1,584,429 in 2014 to $2,092,549 in 2015

STAR produced a number of exciting results in 2015, chief among them authentic human mutation in-vivo models for CMT 1B, CMT 2A and CMT 2E. STAR CMT1A is closing in on a therapeutic treatment utilizing cellular assays the CMTA developed and used to screen compounds from libraries at Sanofi-Genzyme, the National Center for Advancing Translational Sciences (NCATS), and other collaborators. Projects were also funded in CMT 1X and CMT 4C! The CMTAs contract research organization partners, PsychoGenics and the NYSCF, in conjunction with the CMTAs consortium network enabled these important CMTA STAR developments. Stay tuned as we anticipate 2016 to be a breakthrough year!