HEREDITARY NEUROPATHY FOUNDATION

1-855-HELPCMT
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# CMT update™

Winter 2014

## HNF Applies to Secure Funds to Support CMT Clinical Trials

**SEAN EKINS,** PhD, DSc
CSO of HNF

November 6, 2013 was a monumental day for the Hereditary Neuropathy Foundation. After two solid weeks of writing, we submitted a comprehensive proposal to the NIH for the Rare Diseases Clinical Research Consortia (RDCRC) for Rare Diseases Clinical Research Network (U54). This proposal, our largest undertaking to date, represents the TRIAD program's distinct approach to finding treatments and a cure for inherited neuropathies. Our four principal writers, Lori Sames, Allison Moore, Renée J.G. Arnold and myself outlined a massive research initiative featuring a unique collaboration among academia, pharma and non-profits. If awarded, the grant would fund five years of research at $1.25M / year.

For the past five years, the NIH funded the Inherited Neuropathy Consortium (INC) for research in this area, but progress has been slow. The INC website currently lists six studies that focus on exploration of the origins of the disease, along with the development of a pediatric scale and other qualitative measures. After five years of funding, all but one study are still recruiting. These clinical studies are also listed on clinicaltrials.gov with "unknown" status. This indicated what we felt was sub optimal progression of research studies in these diseases to date.

Clinical studies outside of those funded through the INC have also not been successful. A study involving high-dose ascorbic acid for the treatment of CMT1A exemplified the need for better therapeutic options. Further, a 5-year longitudinal study in subjects with CMT1A failed to identify a physiologically significant biomarker in patients vs. controls. Indeed, "at the end of the study, 30 patients (68%) and 2 controls (8%) stated that their physical condition had deteriorated during the 5-year study period.[1]" The authors of the latter study hypothesized that early weakness, pes cavus, lack of reserves, etc. contributed to increased disability in patients, as they aged at the same rate as controls (same decrease in muscle strength and Compound Muscle Action Potential).

Currently, there are no effective therapies for any of the various forms of CMT. CMT1A is a textbook case of how groundbreaking fundamental discoveries by academic scientists are not being rapidly translated to therapeutics quickly enough. For example, the causal gene duplication defect for the most common form of CMT (PMP22) was identified in 1991 and confirmation that the elevated gene dosing resulting in the

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1 C. Verhamme, R.J. de Haan, M. Vermeulen, F. Baas, M. de Visser, and I.N. van Schaik. Oral high dose ascorbic acid treatment for one year in young CMT1A patients: a randomised, double-blind, placebo-controlled phase II trial. BMC Med. 7:70 (2009).

The Hereditary Neuropathy Foundation's mission is to increase awareness and accurate diagnosis of Charcot-Marie-Tooth (CMT) and related inherited neuropathies, support patients and families with critical information to improve quality of life, and fund research that will lead to treatments and cures.

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pathology of the disease was established in 1993, yet the first high throughput screen (HTS) to search for a small molecule therapeutic wasn't published until 2012 by the NIH. This represents a 21-year gap in translation from gene to screen.

HNF's TRIAD program is designed to change this, to increase the pace toward treatments and a cure for these diseases. We are currently validating the HTS with proprietary compound libraries for CMT1A, as well as setting up a strategy that will launch in March, 2014 to conduct low throughput screens (LTS) in vivo (animal models) for CMT2A. ***We at HNF want and encourage as many scientists, advocacy groups, and industry leaders to work on research to treat CMT to improve the odds of treatments. It's about translation, collaboration and delivery.***

In our current NIH proposal, we identified the various gaps in clinical studies in order to translate therapeutics to patients more rapidly for CMT1A, CMT2A and one of the ultra rare fatal CMT's called Giant Axonal Neuropathy (GAN). Essentially our proposal was comprised of these 6 key elements - see box above.

We feel multiple patient advocacy groups and professional organizations can play a central role in educating clinicians and patients. These tasks will assist in the correct diagnosis of disease, recruiting patients for clinical studies and ultimately better delivery of endpoints for clinical trials. By addressing obstacles that prevent industry investment in the various forms of inherited neuropathies now, we can envision treatment options for CMT in the nearer future.

It is time for a new collaborative but urgent approach to finding a cure for inherited neuropathies.

### The Key Elements of Our NIH Proposal

In order to translate current preclinical advances into successful therapeutics there needs to be:

- ❖ Alternative outcome measures for CMT
- ❖ Demonstration that potential treatments are having an effect on the quality of life (QoL) of patients
- ❖ Genetic testing panels to facilitate identification of more patients with CMT and GAN for future clinical trials
- ❖ Validation of putative CSF biomarkers for GAN
- ❖ Utilization of our clinical registry to capture patients for future clinical trials
- ❖ Education of clinicians and patients as to therapeutic options for these diseases.

We believe that as patients and advocates we need a stronger voice in directing the search for therapeutic options. We cannot sit by with what we see is a glacial pace of translation with little to no patient group collaboration. We are driving the search for treatments. This grant is a once every five year opportunity, with a decision made mid to late March.

The proposal process has led us to closer research contacts and given us some additional novel ideas to pursue through other grants in the future. This process has also confirmed our strong belief that we, as a collaborative team of disease foundations, companies and scientists, have an obligation to the CMT community to disrupt the current paradigm of CMT research. Regardless of whether we receive this particular grant, we know we will find other funding opportunities, either at the NIH or privately, to fund the six projects that are critical to the future of clinical trials for CMT.

We recognize the urgency that is frequently absent from the academic community. We can see what's needed and that more collaboration is critical. We gratefully acknowledge all of the scientists, patient advocacy groups and other organizations we work with which enabled us to submit this proposal.

## INTRODUCING OUR NEW CSO **SEAN EKINS**

HNF Chief Scientific Officer, Sean Ekins, is in charge of our Therapeutic Research In Accelerated Discovery (TRIAD) program. Sean also consults for other rare disease groups and spends time as CSO at Collaborative Drug Discovery. He graduated from U of Aberdeen in Scotland, receiving his M.Sc., Ph.D in Clinical Pharmacology and D.Sc. in Science. He was a postdoctoral fellow at Lilly Research Laboratories and has worked at Pfizer, Lilly Research Laboratories, Concurrent Pharmaceuticals, Inc. and GeneGo (now Thomson Reuters). Sean is Adjunct Professor at various schools of Pharmacy at UNC Chapel Hill, UMD, and Rutgers University. He brings his comprehensive background in drug discovery to HNF and is on the scientific advisory board for several companies and editorial boards of four journals.He has authored or co-authored >200 peer reviewed papers and book chapters. Since 2005 he has been awarded nine NIH grants as Principal Investigator. He is looking forward to continuing to apply his drug discovery experience to find a cure for CMT.

TRIAD
THERAPEUTIC RESEARCH IN ACCELERATED DISCOVERY

HNF developed the Therapeutic Research in Accelerated Discovery (TRIAD) as a collaborative effort with academia, government and industry, to develop treatments for CMT. Currently TRIAD involves many groups that span the drug discovery, drug development, and diagnostics continuum.

# Quality of Life and CMT Research

**ALLISON MOORE**
CEO of HNF

Did you know that 95% of clinical trials fail? There are multiple causes, most related to efficacy or safety, which obviously can be harmful and risky for patients. The risk-reward of enrolling in trials is a judgment call based on the devastating effects of disease related to quality of life (QoL) or life-threatening disease. With CMT, the risk-reward is more of a challenging question for many, as CMT in most cases is non-fatal. For many CMT patients, their condition is manageable and not worth the risk of potential harmful effects of drugs or other therapeutic options. However, many are terribly suffering and would benefit from participating in clinical studies that could have therapeutic benefits.

In addition to safety and efficacy, the measurement of patient-reported outcomes is critical when clinical trials are developed for inherited neuropathies. It is well documented that for CMT (and many of the neuromuscular diseases), there are poor clinical outcomes measurement instruments and methods for validating the potential use of treatments for these diseases. HNF has developed two clinical studies that can increase the chances of successful future trials and ensure drug therapies will come to market for CMT.

Assuming the hurdles are overcome in the development of safe treatments, it's still imperative to the success of therapy development to have valid primary and secondary outcomes measures. Although there are some valid novel instruments such as, **NIH's PROMIS® and Neuro-QOL, in comparison to more established tools, such as the Child Health Questionnaire, Short Form- 12/36, and EQ-5D** we still lack strong methods that measure QoL as well as outcomes measures for the disease.

Later this year, HNF will launch a health-related QoL clinical study in collaboration with three neuromuscular centers that will enhance clinical endpoints used for determining benefits or negative effects of potential treatments. Our goal is to develop a clear method for determining the clinical utility of potential treatments for CMT and related neuromuscular diseases.

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## RESEARCH PROGRESS - THERAPEUTIC RESEARCH IN ACCELERATED DISCOVERY

### DRUG DISCOVERY

#### Discovery Biology

- CMT 1A assay development
- CMT1A/1E high content screens
- CMT 2A mouse model
- CMT 2A assay development

#### Translational Medicine

- "Proof of Concept" studies on an in vivo mouse model with CMT 2A
- Transgenic CMT 1A rats for testing various therapeutics
- Partnering with pharma/biotech (in process)

### DRUG DEVELOPMENT

#### Clinical Trials

- Partnering with pharma/biotech (in process)
- New outcome measure/biomarker for CMT1A/CMT2A (grant submitted)
- Alternate outcome measures for CMT (grant submitted)

#### Patient Outcomes

- Global Registry for Inherited Neuropathies
- Diagnosis Patient education (Quest/ Athena Diagnostics)
- Quality of Life study (grant submitted)

TRIAD
THERAPEUTIC RESEARCH IN ACCELERATED DISCOVERY

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The study will be led by Dr. Renée J. Goldberg Arnold, PharmD, President and CEO, Arnold Consultancy & Technology LLC, NYC, where she develops and oversees outcomes research and affiliated software for industry and the federal government. Her special interest in evidence-based health derives from her research that deals with use of technology to collect and/or model real-world data for use in rational healthcare decision-making by healthcare practitioners and policy makers. Dr. Arnold's academic titles include Adjunct Associate Professor, Master of Public Health (MPH) program, Department of Preventive Medicine at the Mount Sinai School of Medicine, where she has developed the pharmacoeconomics coursework and is a preceptor for MD/MPH students completing their MPH practicums. She is also Full Adjunct Professor, Div. of Social Sciences, at Long Island University College of Pharmacy and Health Sciences, including as a preceptor for students completing rotations in health outcomes and pharmacoeconomics. Dr. Arnold is a founding member of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) and is an author/co-author of numerous articles and book chapters in the areas of pharmacology, pharmacoeconomics and cost containment strategies. As Dr. Renee Arnold has adjunct faculty positions at several institutions (Mount Sinai, LIU) and has led multiple US-government, as well as commercially-funded studies, she is well qualified to provide a mutually supportive interaction between scientists conducting clinical research.

If you are interested in supporting our clinical study, please contact Allison Moore at allison@hnf-cure.org

## WHAT IT'S LIKE TO LIVE WITH CMT


Visit our website for your free copy of our latest Essential Guide, What It Is Like To Live with CMT. Based on the findings of renowned Ph.D., Elizabeth Barrett and Dr. Carol Birdsall, the booklet provides a moving and informative account of the daily challenges and triumphs experienced by people with CMT.

## Glossary Of Terms Related To Clinical Studies

**Quality of Life:** is the perceived quality of an individual's daily life, that is, an assessment of their well-being or lack thereof. This includes all emotional, social, and physical aspects of the individual's life. In health care, **Health-related quality of life** (HRQoL) is an assessment of how the individual's well-being may be affected over time by a disease, disability, or disorder

**Clinical Study:** A research study using human subjects to evaluate the effect of interventions or exposures on biomedical or health-related outcomes. Two types of clinical studies are interventional studies (or clinical trials) and observational (noninterventional) studies.

**Outcomes Measure**: A planned measurement described in the protocol that is used to determine the effect(s) of interventions on participants in a clinical trial.

**Primary Outcomes Measure:** A planned outcomes measure of critical importance for evaluating the effect of potential therapies.

**Secondary Outcomes Measure:** A planned outcomes measure that is not as important as the primary outcomes measure, but is still important in evaluating the effect of potential therapies.

**Clinical Trial Design:** The investigative methods used in the clinical study. For interventional studies, these include primary purpose, intervention model (study design), masking (or blinding), and allocation (of treatment options). (See also Study Design data element on ClinicalTrials.gov.)

**Clinical Endpoint:** In a clinical research trial, a clinical endpoint generally refers to occurrence of a disease, symptom, physical and/or emotional deficit that constitutes one of the target outcomes of the clinical study or trial.

**Intervention**: A research study using human subjects to evaluate the effect of exposures to drugs, devices or other therapeutic options on biomedical or health-related outcomes. Two types of clinical studies are interventional studies (or clinical trials) and observational (noninterventional) studies.

# GLOBAL REGISTRY FOR INHERITED NEUROPATHIES

Support Hereditary Neuropathy Research by joining the Global Registry for Inherited Neuropathies (GRIN)

The Hereditary Neuropathy Foundation and Hannah's Hope Fund have developed The Global Registry for Inherited Neuropathies (GRIN) to help in the efforts among the entire CMT Community to further research by building a robust patient registry that offers de-identified data to researchers, pharma and the biotech industry. Your participation will help us get closer to finding treatments for the various symptoms you experience, as well as enhance the understanding about ALL forms of CMT and related inherited neuropathies. It is imperative that we understand, from the patient's perspective, how these diseases manifest, which is critical to clinical trial design.

Through a clinical registry like GRIN, a CMT expert researcher would be able to efficiently obtain critical information such as:

- Distinctions between a triplication of PMP22 vs. a duplication phenotype (CMT symptoms & severity)
- Phenotype of all patients that use adaptive devices to walk
- Patients who experience pain levels from 5 and above on the pain scale
- Patients who have been genetically diagnosed with CMT type 2 (Mfn2 only)
- Patients with HSMN with adult onset
- Age of onset of symptoms for CMT 2E

A registry like GRIN also supports our demand for urgency with hard data. GRIN provides statistical evidence of the widespread incidence of inherited neuropathies, the impact that these diseases have on our daily lives, and the willingness of the CMT community to participate in clinical trials. It is this kind of data that will attract industry to invest the necessary resources for finding a cure.


Our registry will support a wide range of research projects. These include basic research to elucidate disease mechanisms, translational/pre-clinical research and finally clinical research (clinical trials). With organized data collection and large numbers of patients enrolled, GRIN is a useful tool to disseminate the data to the research community, to engage the best industry leaders and at the same time raise the profile of our diseases. GRIN's questionnaire captures factors that influence prognosis, quality of life and the socioeconomic impact of disease. This last area is important to assist with the cost justification of treatment when negotiating with insurance carriers once treatments become FDA approved.

With 95% of investigational new drugs failing to obtain FDA approval, we as a community need multiple companies and multiple advocacy organizations working on our behalf, collaborating (sharing cell and animal models of disease) to find treatments and cures to eradicate these diseases.

Through GRIN, we have robust query functionality that helps us identify trends leading toward accurate diagnosis, observation of the course of disease without treatment modalities, better assessment of the risks of neurotoxins that impact disease progression, better characterization of study cohorts for trials, and additional information to identify trends for symptoms and treatments. All of this information may be useful for the evaluation of clinical outcome measures when experimental treatments become available.

Remember, patient data is de-identified for your protection and under no circumstances will the integrity of the patient be compromised.

By helping us, you allow us to help you!

**JOIN TODAY AT neuropathyreg.org**

# GET INVOLVED

## 3rd Annual Card Party Boutique & Brunch




On January 31, 2014 Broken Sound Country Club had an outpouring of H.E.L.P. supporters that gathered for an exquisite brunch followed with a day of bridge, canasta and mahjong. A highlight of the event was the plentiful silent auction and raffle items that were available. Participants crowded the tables to get their bids in for well-known golf clubs foursomes, restaurants and a trip to New Orleans. Many guests indulged in shopping the boutique that offered clothes, leather goods, and jewelry. Over $30,000 was raised for the Hereditary Neuropathy Foundation's research program, which is focused on finding a cure for CMT. Iris and the Adler family would like to thank all of the friends, family and CMT Community who have supported their cause!

## BECOME A BOARD MEMBER

### IRIS ADLER
HNF Executive Board Member

Being a board member at HNF has enriched my life. Does that sound strange? What do you do when you find out your grandchild has an incurable disease? After the anger subsides and tears dry up you decide you're going to do something about it. So I did ...I dug in, got involved, and joined the HNF board. Then I started a fund raising campaign named after my grandson Elliot. I called the campaign H.E.L.P. (Help Elliot Live Proud). Being involved has been better than any therapy! As a board member I've come to understand more about this awful disease. I'm encouraged that there is so much more hope, research and awareness today than when I first joined the board five years ago.

Each year I send out a letter asking for contributions and each year I think, my friends won't give that much. Yes it's a lot of work, but each year my friends prove me wrong. It is amazing how very generous they are, and often people send me notes that they wish they could give more. I tell them, **every dollar counts** and **every dollar** adds up!

What would make me happier, of course, is to say next year we will find the answers, but in my heart I know that's not true. I do know next year we will be that much closer to finding the cure and a treatment for CMT.

While I am a strong believer, I know it takes teamwork. Everyone needs to help, every board member, every person with CMT, and every relative of someone with CMT and every friend.... **everyone like you.**

**To date the H.E.L.P. fund has raised over $500,000!** If you or someone you love has CMT, please consider helping us in our quest to cure CMT. By joining the HNF board, we will find the treatments that will help my grandson Elliot and all those affect by this terrible disease.

To learn more about our research strategy and breakthroughs, please contact Allison Moore at allison@hnf-cure.org or 212-722-8396
To learn more about the H.E.L.P. fund and/or to become an HNF Board Member, please contact Iris Adler at Irisadler@live.com

# Team CMT & UPCOMING EVENTS

## HNF Charity Partner in Bike New York

On Sunday May 4, 2014, for the fourth year, Team HNF will take to the streets in the TD Bank Five Boro Bike Tour. We'll cycle down the FDR, over the 59th Street Bridge into Queens, through Brooklyn over the Verrazano Bridge, and we'll finish in Staten Island. As one member of Team CMT said, "I hadn't been on a bike in 15 years. This was a great event to get a bird's eye view of New York and raise awareness for CMT." Participation in this unique event is not to be missed! Team CMT members will get VIP treatment, which includes breakfast and lunch as well as priority start, special bike parking at the start, and a Team CMT singlet. We are so excited about this event! Riding through the streets of the Big Apple, riding to raise awareness, joining together to make a difference for all our loved ones who live with Charcot-Marie-Tooth -- it is truly an amazing experience.

For more information or to participate in this memorable event please visit http://hnf.donorpages.com/BikeNewYork2014/ or email Courtney@hnf-cure.org.

## Dallas Realtors Get Fit and Help CMT

HNF thanks Team CMT member Joyce Kelly and The MetroTex Association of REALTORS in partnership with the MetroTex Charitable Trust for hosting the first MetroTex DFW Get Fit 5k-10K-1mile Fun Run on Saturday, May 3, 2014.

To register: http://www.dfwrealestate.com/dfwgetfit

Metro Tex established in 1917 is the largest REALTOR member association in North Texas, representing 13,000 members involved in all aspects of the real estate industry. Bill Head and his team are eager to help spread awareness of CMT and raise funds for CMT Research.

Chris Wodke is running the 5k, two weeks after her Boston Marathon. Allison Moore is walking the 1k, and the day after the race, which will be Sunday, Allison will be biking for the fourth year for 42 miles in the TD Bank Five Boro Bike Tour in New York. Joyce is running the 5K and calling all Team CMT members and anyone interested in a fun day to please join us!


## Boston Marathon 2014

There will be two Team CMT members running the Boston Marathon this year on April 21, 2014. CJ Charbonneau of Kansas City Missouri will join Team CMT Founder Chris Wodke.

In this year's race, CJ who has CMT, is a seasoned long distance runner. She has proudly worn her Team CMT singlet in many half marathons and full marathons in her hometown. "I am very excited to meet her in Boston this April," says Chris. **Like Chris, CJ will also be using her Boston Marathon run to raise funds for CMT research.**

To show support, visit:
http://hnf.donorpages.com/TeamCMT/CJCharbonneau/

For the third year, Chris will conquer another full marathon despite her injuries this past year and the progression of her CMT. Allison Moore, CEO of HNF checks in regularly with Chris and is always amazed by her perseverance to keep running and not give up as she adjusts to her disease progression and modifies her training program to prepare for her races. Chris' regular comment, "I will run and represent all those that can't because of their CMT. I was given a gift of mild CMT, and I am thankful." Together our voices and funds will change that one day!"

# AWARENESS

## Arlene On The Scene

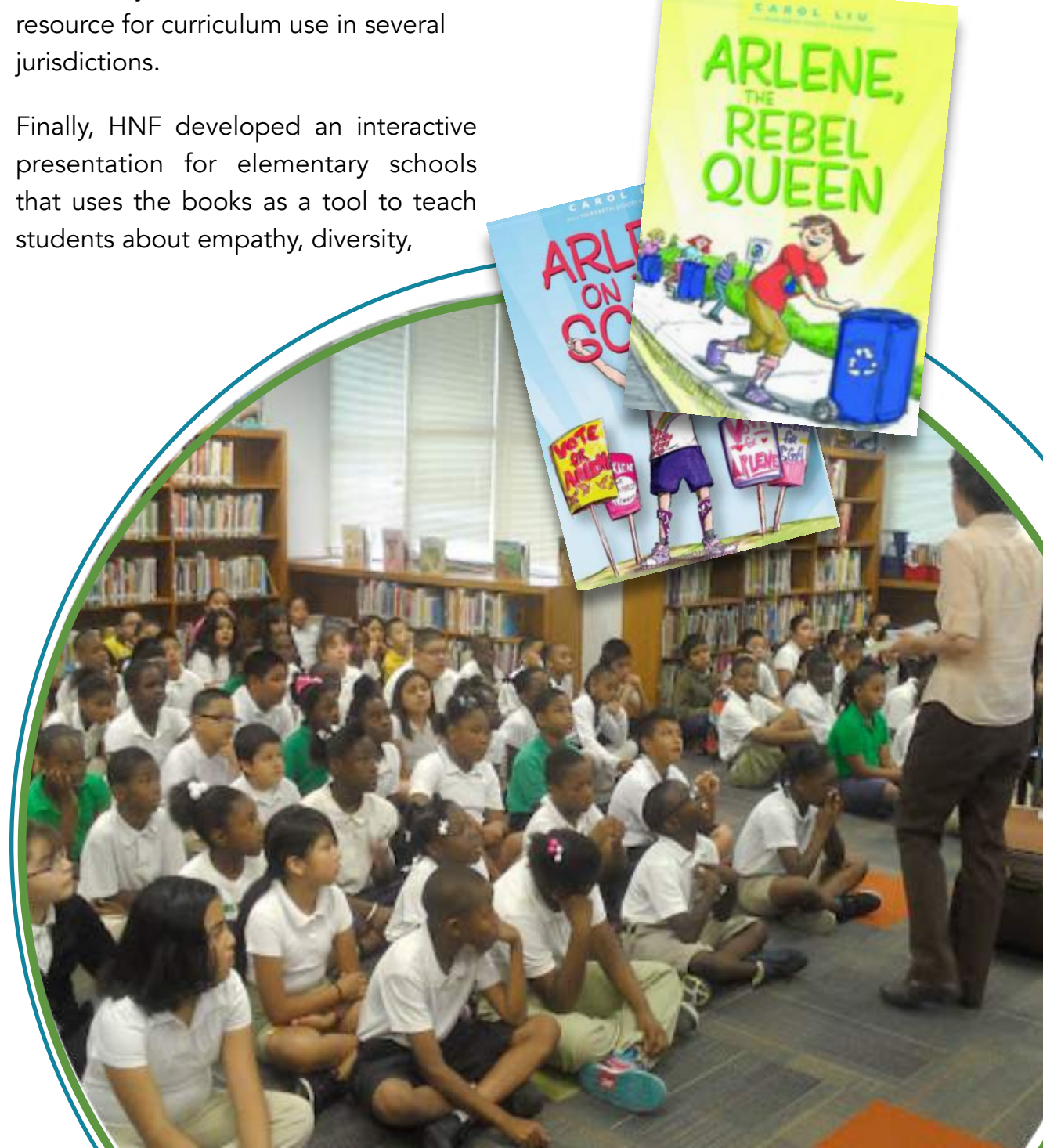
Awareness is a critical step in our journey toward a cure for CMT. Awareness not only brings attention from researchers, pharma and government, who will hopefully one day find that cure, but awareness addresses the needs of people who live with CMT right here, right now. Awareness offers comfort in familiarity, support in understanding.

One of the strategies of the Hereditary Neuropathy Foundation to increase awareness of CMT is to start at the beginning, with young people, and to funnel information through schools. To catch the attention of youth, as we all know, you've got to be fun, friendly and familiar. Enter Arlene, onto the scene.

HNF has sponsored the writing of two children's books, *Arlene On the Scene* and its sequel *Arlene, the Rebel Queen*, which feature the main character living with CMT. Arlene is like a lot of fourth graders--she dreams big, tends to get in a bit over her head, and makes a mistake or two. Like a lot of fourth graders, she begins to realize that everyone is different, and that there seems to be some kind of vague idea of what is "normal" and what is "different." In the first book, Arlene struggles with this concept, as she has just begun to wear leg braces and finds herself perceived in a way that doesn't match how she feels. With the guidance of her mother, who also lives with CMT, Arlene begins to embrace difference and teaches others to do the same. In the sequel, having developed a positive and powerful sense of self, Arlene sets out to lead a revolution! She and her classmates discover ways to make beneficial change at their school by increasing recycling efforts. Themes of social change and independence offer readers important life lessons, and Arlene presents a unique and positive role model as a leader to her classmates.

The books are available through all major wholesalers and retailers, and every penny of proceeds is donated to fund CMT research. HNF also felt it was important for these books to be available in schools, particularly as more districts are requiring literature that offers diverse perspectives and role models. Thus the books have been approved for school libraries around the country and have been listed as a resource for curriculum use in several jurisdictions.

Finally, HNF developed an interactive presentation for elementary schools that uses the books as a tool to teach students about empathy, diversity, youth activism, and of course, CMT. These presentations are offered through HNF's School Outreach Program at no cost to schools. Since inception in 2010, HNF has presented at over 100 schools throughout the US, including Boston, New York, Philadelphia, Washington DC, Chicago, Dallas and Los Angeles. Teachers rave about the important social concepts included in the presentation, along with information about CMT and a whole section on the power of writing to effect change. For more information about the School Outreach Program, see www.hnf-cure.org or ArleneOnTheScene.com.



# AWARENESS

## 'Bernadette' Is Really Getting Around - Oh What A Night in NYC!

*Bernadette*, the first ever full-length documentary on CMT was produced by Run Amuck Productions, sponsored by HNF, and distributed by Cinema Libre Studio. On Wednesday January 29th, the film premiered in HNF's hometown of NYC and also the birthplace of Run Amuck, who conceived of the movie in it's original headquarters on Wall Street.

The Angelika Film Center in Soho didn't know what hit them when over 75 people joined together to view the film and NY Senator Liz Krueger's office presented HNF's CEO/Founder Allison Moore with a proclamation for their dedication and hard work in increasing CMT awareness, supporting the CMT community and funding of CMT research.


Josh, Bernadette, Sharon, Jay

The event also featured a Q&A with director Josh Taub, star Bernadette Scarduzio and Allison Moore.

Sponsored by local jewelry designer jaKe & anna, 50% of all tickets sales were donated to HNF. For more about the wonderful world of jaKe & anna: www.jakeandanna.com.


## College Was So Scary For Me! Not Anymore...

**BERNADETTE SCARDUZIO**

Villanova here I come!

Even though I was terrified that I wouldn't be able to handle the physical demands of college I applied anyway.

Through my own experience of living with CMT and the daily struggles of walking to and from class, carrying a heavy backpack, and doing my best to hide my CMT, the pressure got to me and I dropped out after one year.

Back in those days, we didn't have the openness we do now with disability and mandated laws of accessibility. The isolation was painful and debilitating and my teenage and young adult years were not ideal.

Almost 16 years later, this is my chance to attend college as a mentor and to help students entering college overcome the many challenges of living with a disability.

The Bernadette film is a unique perspective on CMT and is a perfect tool for schools and universities – from screening to in-classroom use. Cinema Libre Studio offers a wide variety of affordable options for anyone to obtain the appropriate license for their project, event, or curriculum.

This outreach effort is being launched at the Villanova University in Pennsylvania. For more information contact bernadette@hnf-cure.org

*Proclamation by Senator Liz Krueger*

*Honoring*

# Hereditary Neuropathy Foundation

**WHEREAS,** the Hereditary Neuropathy Foundation raises awareness among the general public and medical community, funds translational research, and provides support to patients and families affected by Charcot-Marie-Tooth disease (CMT) and related inherited neuropathies.

**WHEREAS,** the Hereditary Neuropathy Foundation supports the sponsorship of critical awareness projects such as the production of the documentary "Bernadette" and the children's books "Arlene on the Scene.

**WHEREAS,** the Hereditary Neuropathy Foundation developed the global registry for inherited neuropathies (GRIN) to collect clinical and genetic information on patients to help advance therapy development for these debilitating disorders.

**WHEREAS**, the Therapeutic Research in Accelerated Discovery (TRIAD) program is a collaborative innovative research effort with academia, government and industry, to develop treatments for CMT and related inherited neuropathies. The TRIAD involves many groups that span the drug discovery, drug development, and diagnostics continuum.

**WHEREAS**, the Hereditary Neuropathy Foundation supports Team CMT, a group of athletes dedicated to raising AWARENESS OF CMT by participating in athletic events around the world.

**WHEREAS**, the Hereditary Neuropathy Foundation is committed to putting CMT on the national health care agenda, and provides a strong organizational voice to those living with CMT all over the world; be it therefore

**RESOLVED**, that this Proclamation be presented to the Hereditary Neuropathy Foundation.

Dated this 10th day of January, 2014
In Witness Whereof, I Have Hereunto
Set My Hand and Signature

Liz Krueger

Liz Krueger
New York State Senator
28th District

# COMMUNITY

## Embrace the Brace

### A Mother's Perspective on Helios

**KERIN REILLY**

My daughter Dakota is a force to be reckoned with, a strong willed, happy, smart young lady with a wit that could knock you off your chair with laughter. She's had the personality of a leader since her very first day on the Kindergarten soccer field. Never one to be a wall flower but beautiful as a rose. The light she has carried around since birth is contagious and could brighten almost any situation.

That light dimmed a bit when, at age eleven, Dakota was diagnosed with CMT1A. We hadn't the slightest idea what CMT was or where it had come from. It turned out that after some testing, we learned that my husband, Dakota's father, has a mild case of CMT1A that was never diagnosed.

We immediately dove right in to find the answers, research, treatment, assistance - anything that could make the journey she was about to take as comfortable as possible. What I realized soon after is that there is no way to make this disease "comfortable" for her. That is a hard realization for a mother.

Here is where I turn all credit to my husband, Joe. His dedication and effort at providing for Dakota knows no limit. I'm the researcher but he is the implementer! They began taking trips to NYC to meet with specialists, trips that always included some tears but also some fun, like father/daughter lunches or shopping stops on the way home. He is her rock (and mine). Completely unselfish, he never blinked an eye at his diagnosis of CMT, except in regards to how it would impact his girl. Their longest father/daughter trip occurred last April when they flew to Las Vegas to meet Mitchell Warner, CPO Owner of Ortho Rehab Designs and creator of the Helios brace. We had the highest of hopes that these custom braces would be the difference between night and day for Dakota. I am happy to report that we were correct.

This is not to say that we did not face challenges along the way in terms of adjustment (both physical and emotional). The physical adjustment is common and short-lived. But the physical adjustment was not my motivation for writing this piece. It was the emotional journey of Dakota embracing her Helios that I found so remarkable.

A good deal of mental preparation filled the weeks leading up to the trip, but no one (particularly a teenage girl) can really be prepared for the moment they first put on a pair of leg braces, braces that will likely be a part of their daily routine for the rest of their life. Being the fashion queen that Dakota is, panic immediately ensued! "How do I cover these?" "What am I going to wear?" "Everyone will be staring at me and asking questions, how do I respond?" She knew that physically her life was about to get easier but her seventeen year old mind was not ready to acknowledge or discuss the braces with her peers.

As each month passed, she came up with new and creative ways to incorporate the braces with her fashion style. Legwarmers, knee socks and altering clothes seemed to work for her; did I mention that she's a seamstress and has designed a collection of her own clothing? Yup, she's still a force to be reckoned with!

There have been many moments in the past year that have been heartfelt and inspiring. My favorite was when I received the precious opportunity to revisit an old pastime of walking around the ponds in our village and chatting about life with my daughter. When Dakota returned from Vegas, we took our first long walk since she was eleven years old. That was a gift. A gift I can thank bracing for.

# RARE FORMS OF CMT

## Giant Axonal Neuropathy (GAN) - May Not Be So Rare

**LORI SAMES**

Do you have CMT Type 2? Do you know your causal gene defect?

You may have Giant Axonal Neuropathy (GAN), one of the most rare forms of inherited neuropathy. Through studies funded by Hannah's Hope Fund for GAN, milder progressing GAN cases have been identified, and patients with straight hair have been genetically confirmed to have GAN. Neurologists have told us that due to it's rarity, it is unlikely they would even think of GAN as a possible diagnosis, and they said they wouldn't test for it if the patient didn't have the typical kinky hair, a characteristic of GAN. This means there are potentially thousands of CMT Type 2 patients with straight hair that have GAN and have been clinically diagnosed with CMT Type 2.

Mutations on the GAN gene that render a complete loss of functional protein are severe cases, typically resulting in death by the mid-20's. However, some missense mutation types on the GAN gene render a low level of functional protein, and thus have a much slower progression, very typical of CMT Type 2 patients.

Why is it important to learn if you have GAN? Because a Phase 1 GAN gene delivery trial will hopefully begin in April 2014, pending regulatory approval. A hopeful treatment is on the horizon!

GAN gene sequencing is commercially available through Prevention Genetics (a US company). Your provider can arrange for sequencing through Prevention Genetics, and saliva kits to collect DNA for sequencing can also be sent internationally.

To learn more about GAN and Hannah's Hope Fund, the only organization in the world focused on this devastating form of neuropathy, visit: www.hannahshopefund.org.

## Gene Triplication in CMT 1A

**DR. PENGFEI LIU**
Baylor College of Medicine

Dr.Lupski, Dr. Liu

CMT1A is usually caused by a duplication of a segment on the human chromosome 17. A further increase in dosage, i.e. triplication of the same segment, may cause peripheral neuropathy conditions that is more severe than that observed with usual CMT 1A duplication.

This condition may be present in families with a history of CMT1A duplication, in which the affected child presents more severe symptoms than the affected parent. CMT1A triplication is clinically under diagnosed and is only starting to be appreciated by research efforts. Dr. James Lupski's group at Baylor College of Medicine is studying the clinical consequence and molecular origin of the CMT1A triplication.

If you suspect you have this condition in your family (affected child having a more severe symptom than the affected parent) and are interested in participating in research to find out the cause of the severe condition in your child, please contact Allison Moore at allison@hnf-cure.org or call toll free 1-855-HELPCMT.

Please submit a copy of your clinical record and molecular diagnosis (if applicable) along with your inquiry.

Lori & Hannah

HEREDITARY NEUROPATHY FOUNDATION

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HereditaryNeuropathyFoundation

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## Support HNF

*Running For My Life:*
Book is $16.95, $6 of each purchase will go CMT Research. Be sure to use the coupon code at check out: CURECMT

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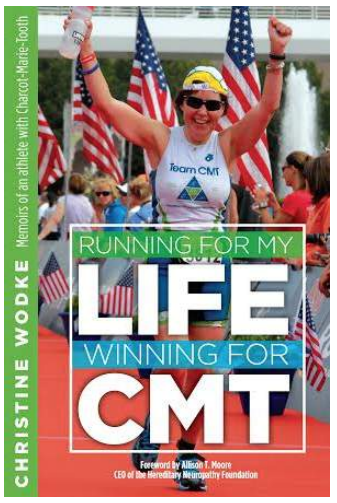



## Share Your Story

We look for stories for future newsletters. If you participate in any of our programs (Team CMT, fundraisers, volunteering), or simply your story of living with CMT, send us information and photos and we'll publish it. If you want to host an event, but don't know how to get started, contact us! Call or send submissions to Courtney Hollett at 919-824-7260 or Courtney@hnf-cure.org

## CHARCOT MARIE TOOTH DISEASE

It starts in infancy
& lays dormant in the body until one day...the symptoms start to appear.

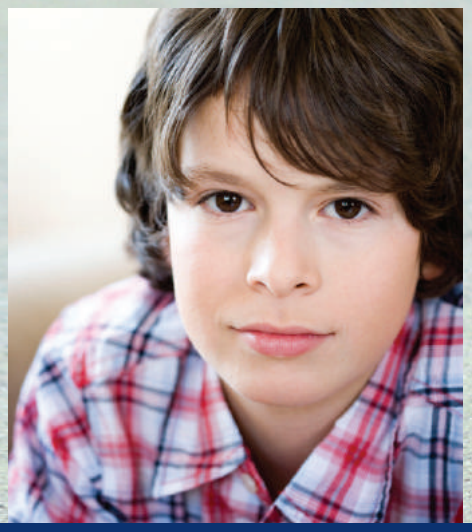
everything seems ok until her...

- FEET START TO LOOK DIFFERENT
- MUSCLES ARE WASTING
- TOES START TO curl
- SHOES DON'T FIT AS WELL
- NEUROPATHIC PAIN
- ABILITY TO HOLD, GRASP & TURN THINGS IS LOST
- BALANCE BECOMES UNSTABLE

*Even* if she is lucky enough to get a ***proper*** **diagnosis** of this genetic disease, there are **no *real* treatments** & it is **progressive**. The outlook can be bleak.

# CMT Testing from Athena Diagnostics®

## The Most Efficient Path to an Accurate Diagnosis.



**MOLECULAR TESTING FOR CHARCOT-MARIE-TOOTH DISORDER**

Athena Diagnostics now offers advanced sequencing with a cohesive algorithmic approach that simplifies testing procedures and provides the most efficient path to an accurate diagnosis. With a single blood draw, our two-tier methodology first tests for the most common gene mutations based on electrodiagnostic studies and family history. If negative, a second tier test, powered by the advanced sequencing platform, broadens the search to confirm a diagnosis.

To learn more, download our **CMT testing algorithm** at AthenaDiagnostics.com/cmt

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Testing that Makes a Difference.

*PMP22 | CX32 | MFN2 | MPZ | EGR2 | LITAF | PRX | GDAP1 | RAB7 | GARS | NFL | HSPB1 | LMNA | FIG4 | SH3TC2 | DNM2 | YARS | FGD4 | NDRG1 | TRPV4 | HSPB8 | MTMR2 | SBF2*